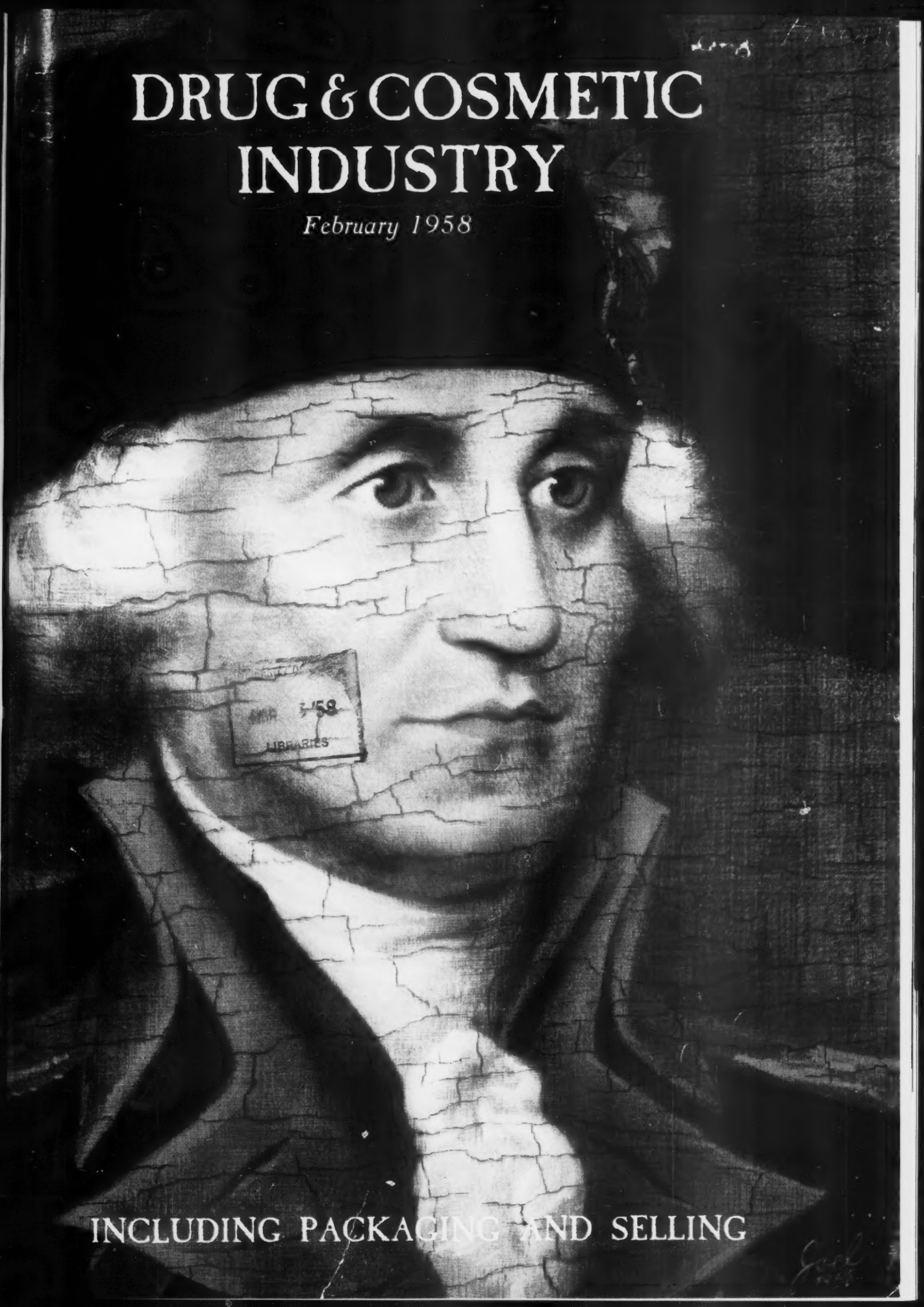
DRUG & COSMETIC INDUSTRY

February 1958



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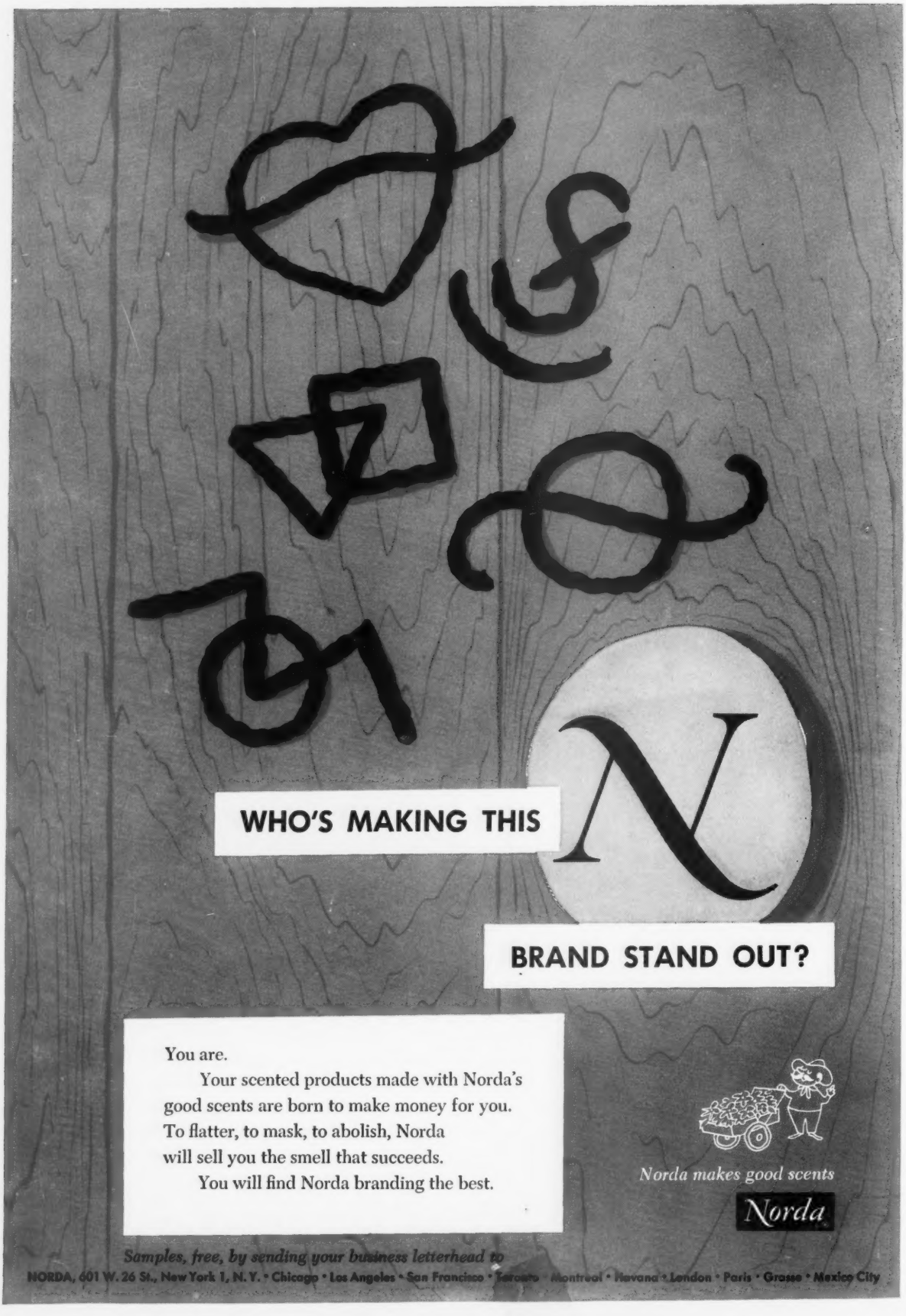
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Drug and Cosmetic Industry

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Drug & Cosmetic Industry is published monthly by Drug Markets, Inc., Frazer V. Sinclair, President and Treasurer; Thomas R. Farrell, Vice-president and Secretary. Editorial and General Office: 101 West 31st St., New York 1, N. Y., U. S. A. Publication Address: Sun Printing Corp., 28 Renne Ave., Pittsfield, Mass., U. S. A.

Business Manager, Frazer V. Sinclair; Advertising Manager, P. W. Alexander; Advertising Representatives, Walter M. Brauneiss, C. R. Keeley; Production Manager, Katherine Hyde; Circulation Manager, Harry G. Kelbly.

Midwestern Advertising Representative: Dwight Early and Sons, 100 No. LaSalle St., Chicago 2, Telephone, CEntral 6-2184.

Subscription price $3.00 a year, in advance. Foreign Countries, $5.00. Single copies, 35c; Back issues 50c. Entered as Second Class Matter, January 1, 1928 at the Post Office at Pittsfield, Mass., under the Act of March 3, 1879. Member of Audit Bureau of Circulation.

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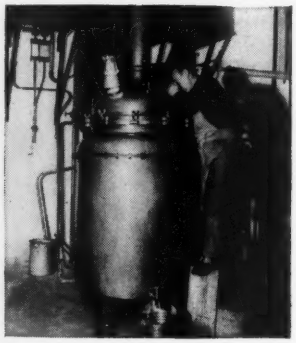

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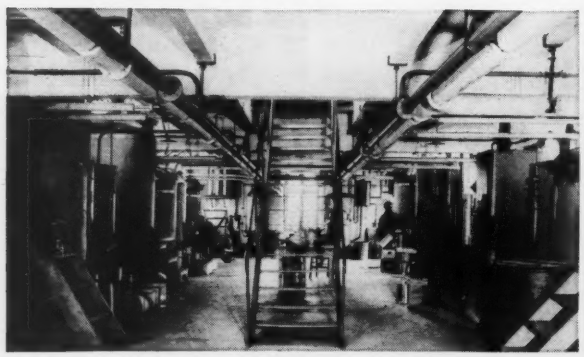
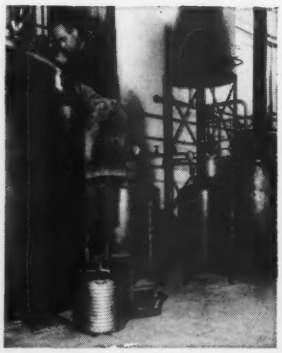

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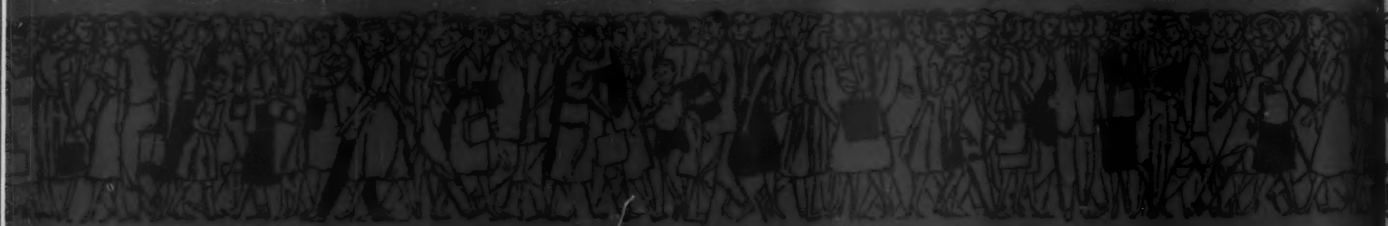


CYANOCOBALAMIN

AT ALL AGES

PRODUCT POSSIBILITIES

Market	Size	Sales Potential (Multivitamins)	Cyanocobalamin (Vitamin B_{12}) Provided Daily
PRENATAL	More than 4,000,000	More than $100,000,000	Up to 25 micrograms
INFANT	More than 8,000,000 (less than 2 years old)	More than $120,000,000	Up to 25 micrograms
CHILDREN AND ADOLESCENTS	More than 50,000,000	More than $600,000,000	Up to 25 micrograms
PATIENTS UNDER STRESS*	In the millions	In the multimillions	Up to 25 micrograms
"40-PLUS"	Nearly 60,000,000	More than $0.5 billion	Up to 10 micrograms
"65-PLUS" (GERIATRIC)	14,000,000 —Plus	$400 million —Plus	Up to 25 micrograms

New Discoveries About Vitamin B_{12} (Cyanocobalamin) Renew and Enhance Medical Interest in All Vitamins

New product possibilities and market potentials for Vitamin B_{12} and Multivitamins are steadily on the increase . . . by virtue of a veritable flood of nutritional and clinical reports from a multitude of researchers exploring the manifold significance of Cyanocobalamin. Vitamin B_{12}* is the most potent vitamin—physiologically, clinically, and commercially . . .

12 BASIC REASONS FOR EXPANDING B_{12} MARKETS

As you can note in the tabulation of PRODUCT POSSIBILITIES (page opposite), the markets and sales potentials for modernized Multivitamins providing optimal levels of Cyanocobalamin are indeed vast. To explain why these potentials are so great and are still growing, here are 12 major highlights from today's news about the most newsworthy vitamin:

1. Vitamin B_{12} is a vital factor in basic metabolic processes, including synthesis of nucleoproteins.

2. Cyanocobalamin is essential for human nutrition at all ages.

3. It is required for normal production and maturation of red cells, at all ages—hence for prevention of pernicious anemia.

4. The integrity of the oral and gastrointestinal epithelium is vitally dependent upon an adequate intake of this vitamin.

5. It is required for the metabolic processes involved in the functional integrity of myelinated fibers in the central nervous system and peripheral nerves.

6. A vital factor in general health and vigor, vitamin B_{12} intake must be adequate to prevent ultimate physical and mental deterioration, as manifested in pernicious anemia.

7. NEVER DISPENSABLE! The oral requirement for normal non-pregnant adults has been estimated to be about 5 micrograms daily, while the parenteral requirement is thought to be 1 microgram.

8. Because of their greater metabolic demand, children may require relatively much more Cyanocobalamin than adults.

9. Possibly, "hidden hurt to the unborn" (such as congenital malformation) may result if significant vitamin B_{12} deficiency develops EARLY in pregnancy.

10. Many GERIATRIC patients have been found to have low blood levels of vitamin B_{12}—supplementary vitamin B_{12} may be indicated.

11. IN STRESS: Considerable evidence favors the view that vitamin B_{12} may be one of the vitamins the requirement for which is increased by serious, prolonged stress.

12. IN NUMEROUS DISORDERS, multivitamins with high levels of Cyanocobalamin are being used by physicians who are convinced that extraordinary stress increases vitamin needs.

OUTSTANDING ADVANTAGES OF CYANOCOBALAMIN U.S.P.

Cyanocobalamin U.S.P. is Crystalline Vitamin B_{12}, with officially recognized U.S.P. status. Crystalline Vitamin B_{12} is outstandingly safe—it is best for parenteral administration because virtually free from side effects.

Clinical acceptance has been clearly established: Cyanocobalamin U.S.P. was used in the majority of the published clinical studies on the value of Vitamin B_{12}. Moreover, because of precise uniformity, pharmaceutical behavior determined on one lot of Crystalline Vitamin B_{12} will be true on all successive lots. And, in certain formulations the crystalline form of the vitamin is more stable than the concentrate.

Thousands of physicians have been impressed by the Merck Crystalline Vitamin B_{12} exhibit and the new 72-page exhibit booklet spotlighting the safety of Cyanocobalamin U.S.P.: "For the benefit of your patient, insist on Crystalline Vitamin B_{12} —i.e., the only Cyanocobalamin U.S.P. . . . Make sure that Cyanocobalamin U.S.P. is on the label."

MERCK SERVICES— MULTIPLE AND UNIQUE

First with Vitamin B_{12} as well as other vitamins, Merck celebrates in 1958 the eleventh anniversary of the discovery of Cyanocobalamin by Merck researchers.

For more than a decade Merck has steadily expanded its progressive technical investigations of every facet and every application of the most potent vitamin. Vast data have been amassed and kept up to date as regards clinical experience, new product development and every type of problem involved in analysis, labeling, and marketing of Vitamin B_{12} preparations.

Now Merck Production supplies Crystalline Vitamin B_{12} and Cobalamin Concentrate in a full selection of types—plus an extensive variety of the other vitamins.

In addition here are five uniquely helpful Merck services to automate your vitamin marketing:

1. Merck-sponsored Research creates new applications for your vitamin products.

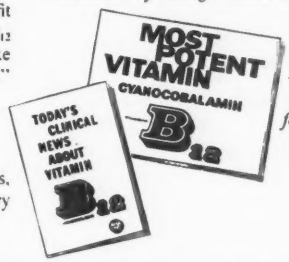
2. The Merck Memo news-features help to spark your ideas for new vitamin products.

3. Merck Literature Service (now exceeding 100 pieces on vitamins) is designed to aid your product development staff.

4. The Merck Technical Service staff is ready to assist you on problems in formulation, compatibilities, labeling, and specialized control procedures you may need to guard your product quality . . .

5. Merck Promotion is building nation-wide physician interest in—and acceptance of—YOUR vitamin products. Merck exhibits and exhibit booklets pre-sell your Vitamin B_{12} products.

If you are planning any product development involving the most potent vitamin or any other vitamin, you'll be underway faster and with fewer headaches by calling Merck FIRST.



Ask your Merck representative for copies of these authoritative brochures

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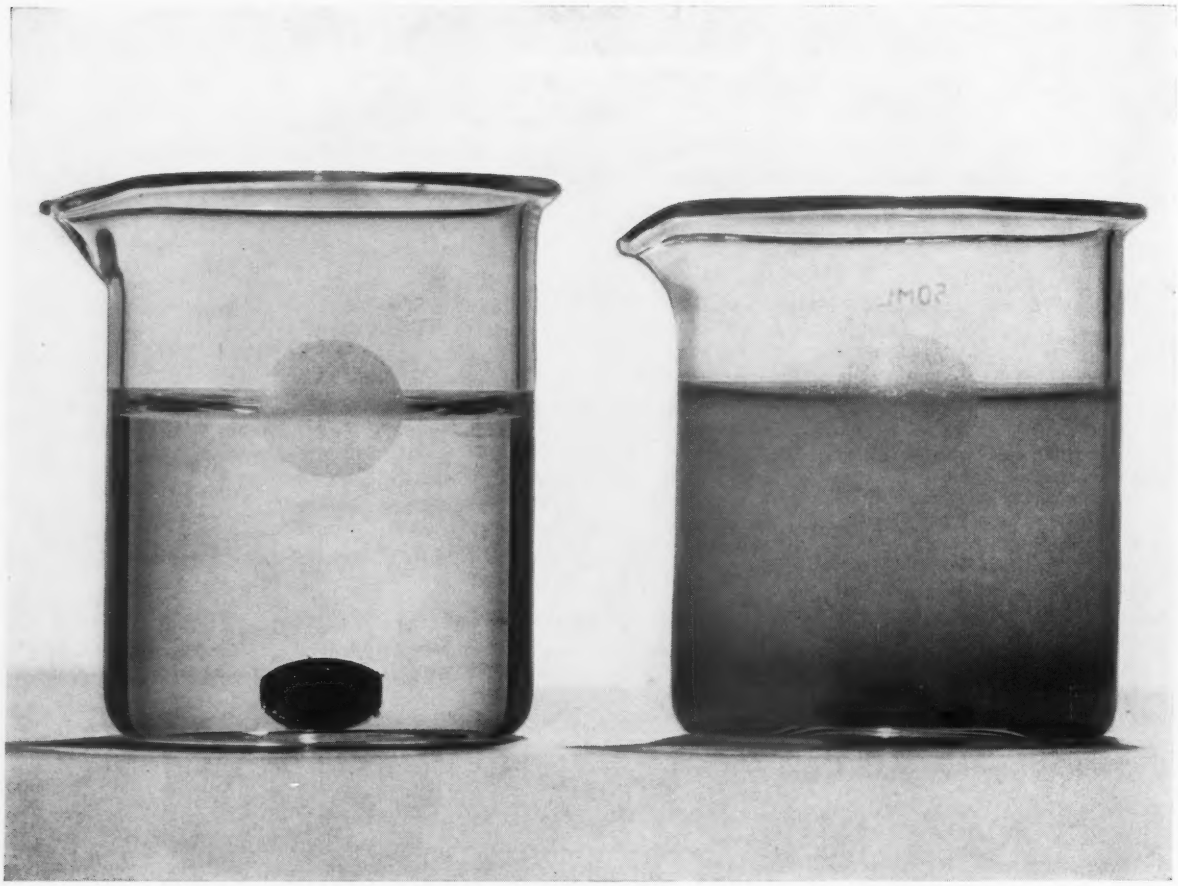

This lecture-table stunt demonstrates the enteric-coating idea in vivid if unsophisticated terms. Standardized U.S.P. testing procedure adds the factor of mechanical agitation.

This is artificial gastric juice at pH 1.5. The tablet was coated with Eastman C-A-P Cellulose Acetate Phthalate. In 24 hours nothing has happened.

This is artificial intestinal juice at pH 7.5. Tablet identical with the one on the left has completely disintegrated in one hour.

For medicaments that should get to the intestine

There are medicaments already developed which would be more useful if only you could get them from the mouth to the intestine.

Now is a good time to re-evaluate such medicaments, perhaps to reactivate products having side effects that enteric coatings might eliminate.

For now you can readily turn to *Eastman C-A-P Cellulose Acetate Phthalate*. The troubles encountered with the enteric coating substances of the past are gone.

Eastman C-A-P Cellulose Acetate Phthalate depends not on the solvent action of water, not on a reliable rate of stomach voiding, not even entirely on alkalinity in the intestine. It depends on the total chemical climate of the intestine.

The material has been used on more than a billion tablets and has taken them intact into the intestine, where they can do the most good. It permits the use of high-speed coating techniques. It is compatible with certain plasticizers.

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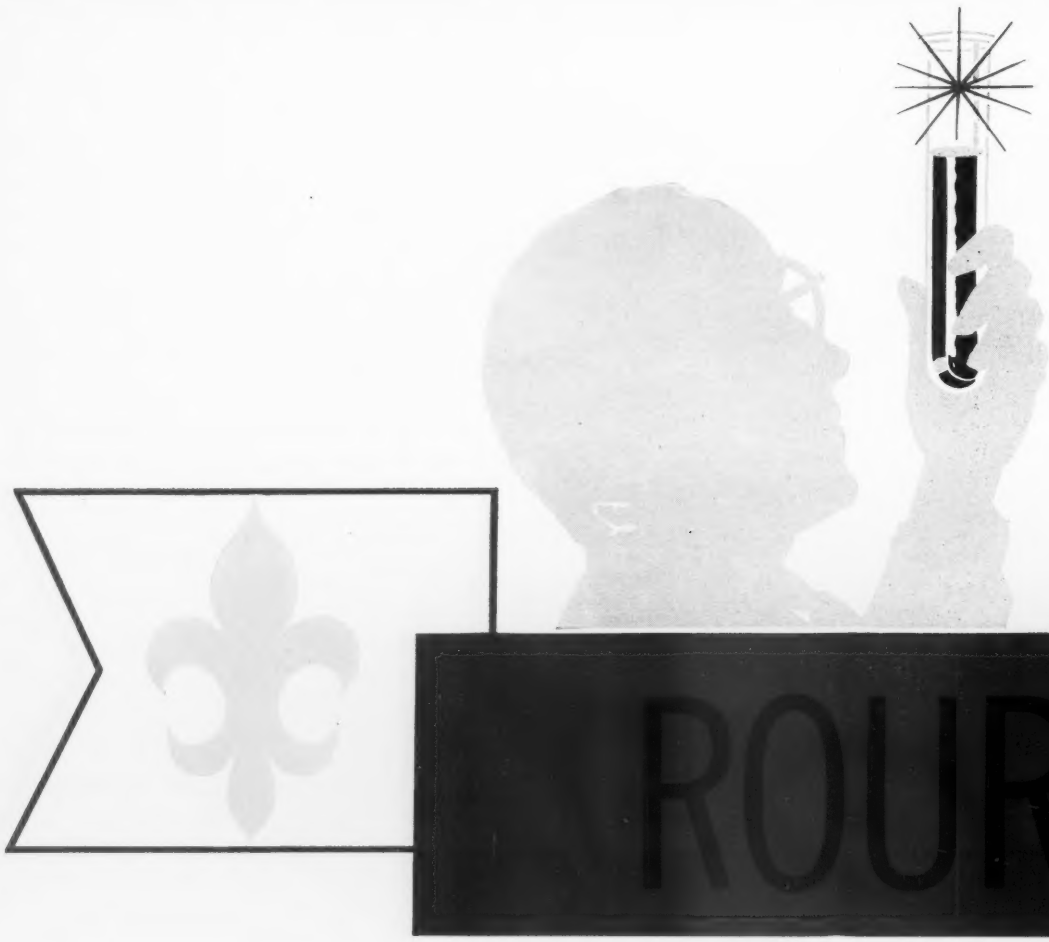

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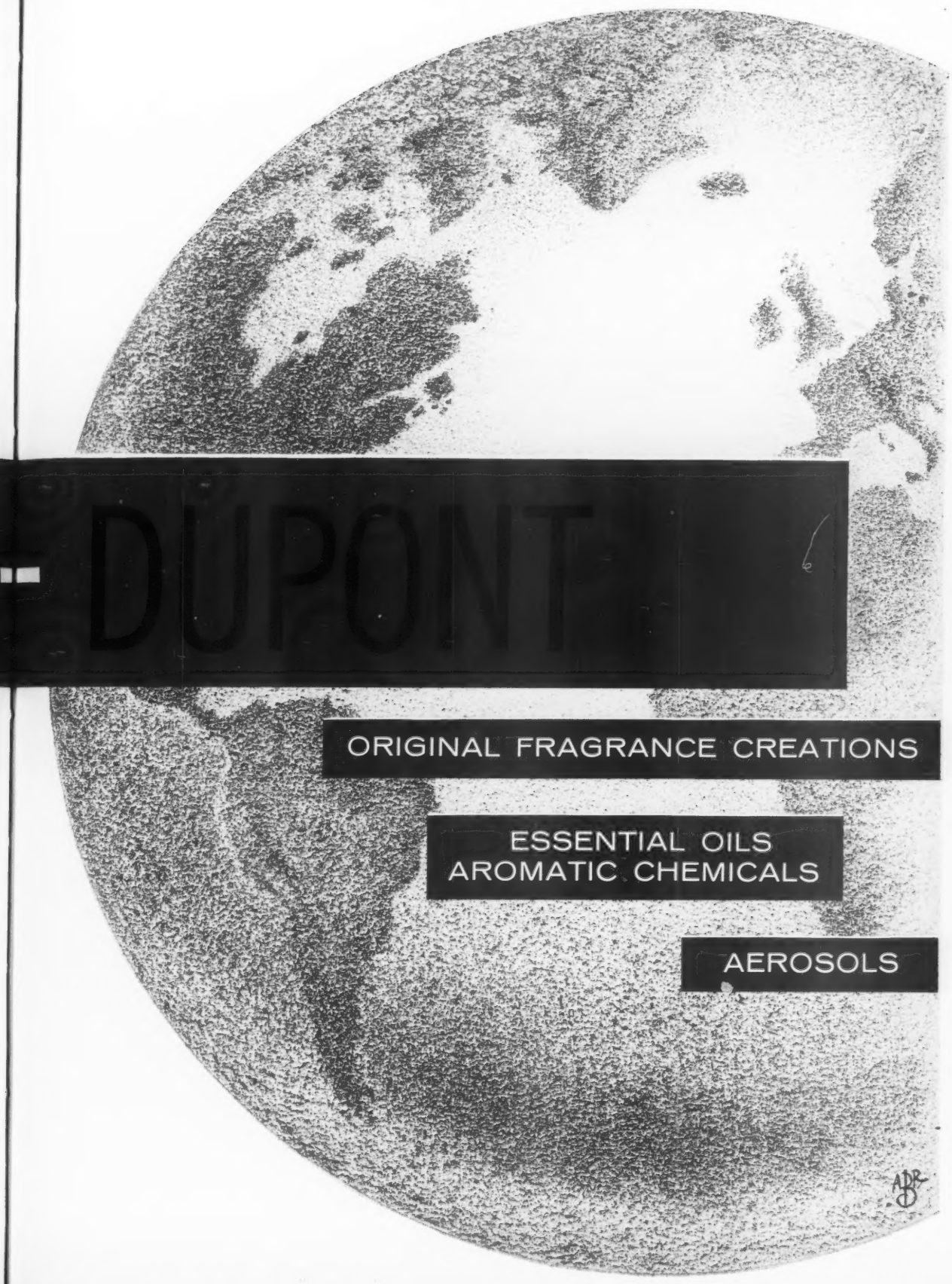
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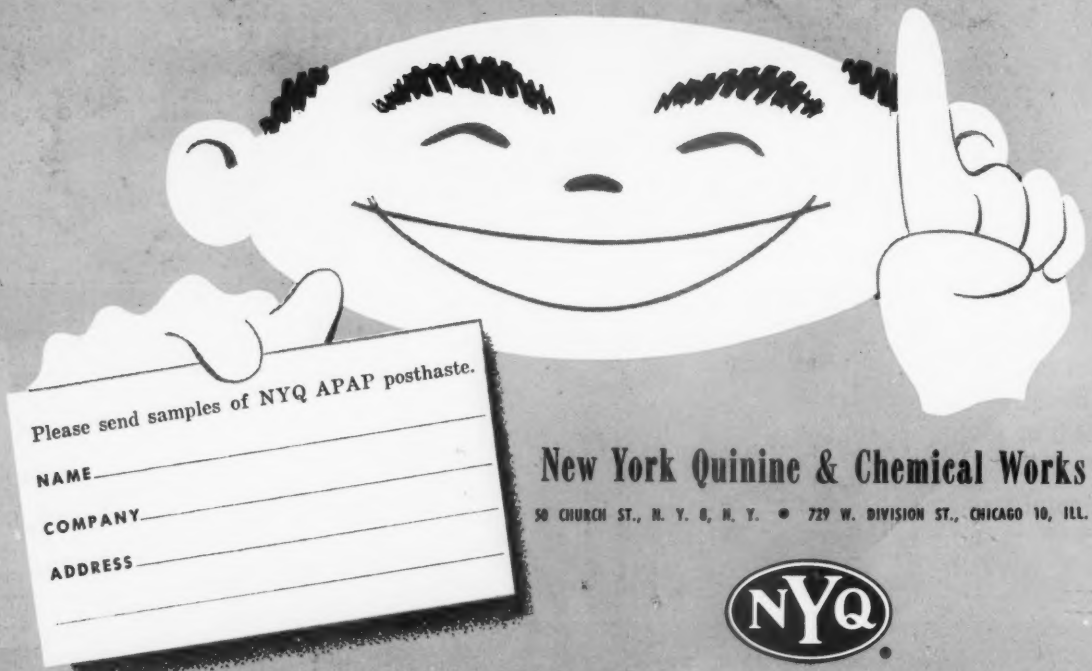

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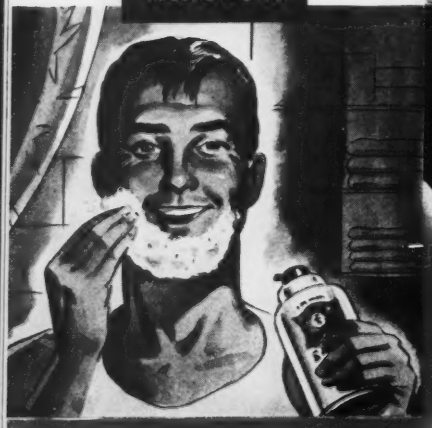

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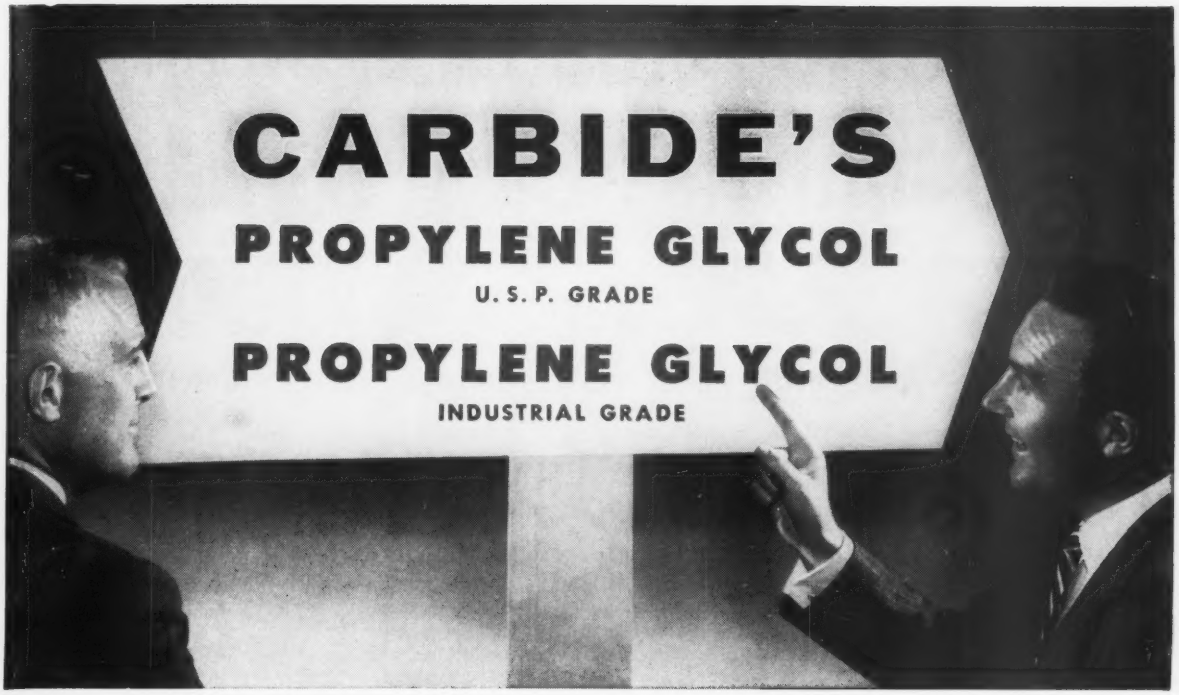

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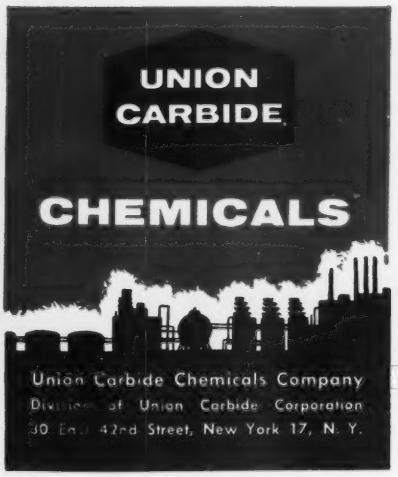
- *2,2-Diethyl 1,3-Propanediol*
- *Hexylene Glycol*
- *3-Methyl 1, 5-Pentanediol*
- *1,2,6-Hexanetriol*
- *2-Ethyl 1,3-Hexanediol*
- *1,5-Pentanediol*



For further information on propylene glycol or any CARBIDE chemical, write for your copy of "Physical Properties of Synthetic Organic Chemicals" (F-6136) or the "Glycols" booklet (F-4763). Offices in principal cities—in Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.

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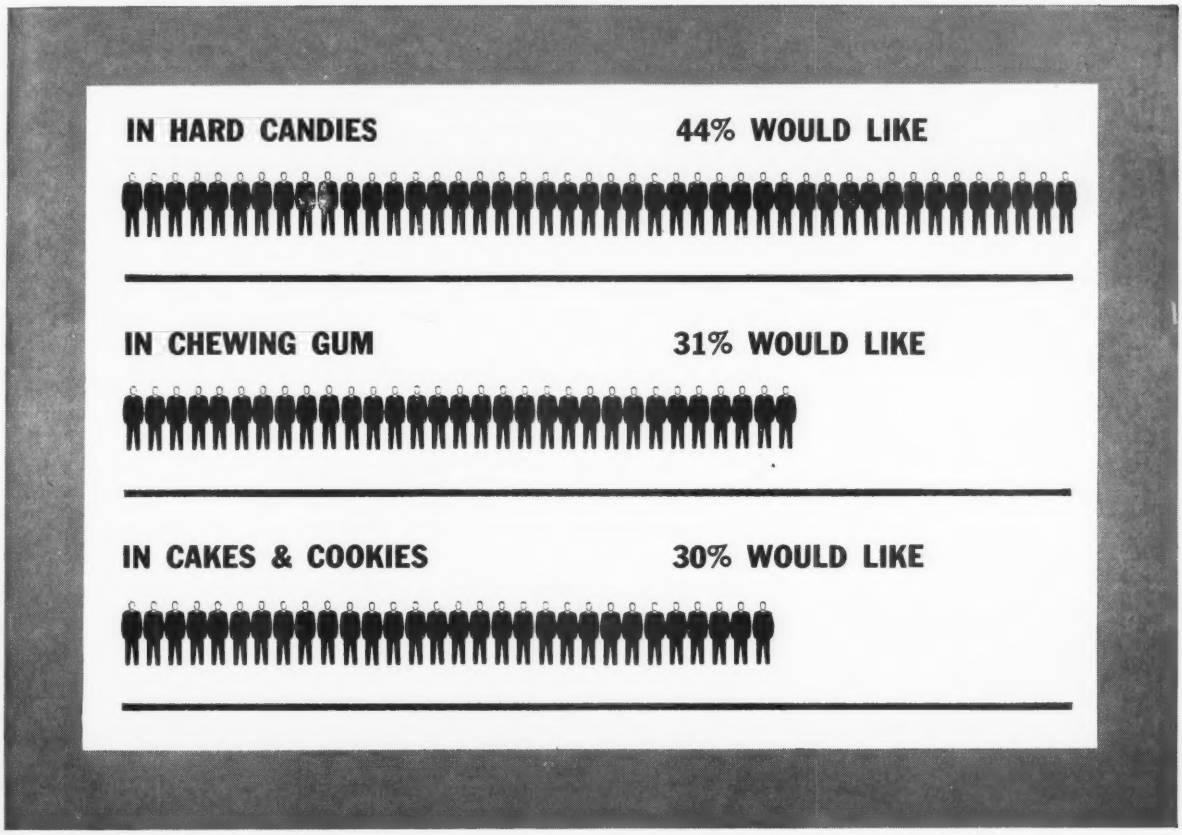

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Wherever flavoring is important, this recent survey by the Gallup Organization is revealing new markets for anise among one out of three adults. Trained Gallup Poll interviewers determined that anise, or the closely similar flavor, licorice, is preferred by millions in a wide variety of products. Here are some additional facts from this nation-wide survey:

- 34,000,000 adults (out of an estimated 103,000,000 U. S. adult population) are real fanciers, while another 16,500,000 adults like the flavor.
- A larger proportion of the fanciers is in the upper economic group.
- Slightly more women than men like anise flavoring.
- More younger adults than older persons say that anise flavor would appeal to them.
- Anise flavoring is more popular in the East and West and in communities of over 500,000 population.
- Those who like the flavor are strongly in favor of it!

Hercules anethole, a domestic equivalent to imported anise, is produced from a plentiful domestic raw material source to meet U.S.P. specifications. Anethole represents a dependable source of supply for a high quality product. Ask your regular supplier for Hercules anethole or flavors based on anethole, and include anethole-flavored products in your line.

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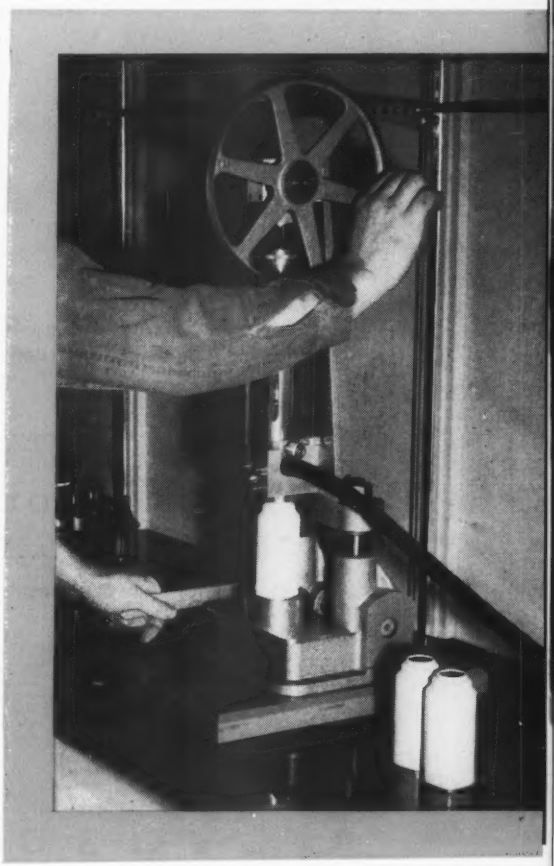
van Ameringen-Haebler, Inc

Not only the creative skills of the master perfumer, but also the technical skills of the chemist and researcher in many branches of science, play an important part in producing the right fragrance for your product. In the selection of your next perfume, seek the able guidance of the van Ameringen-Haebler team.

Skillful Hands



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Tegin 515...

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Propylene Glycol Monostearate — Self Emulsifying. For greaseless creams—brushless shave, foundation, suntan: lotions — foundation, suntan, ointments.

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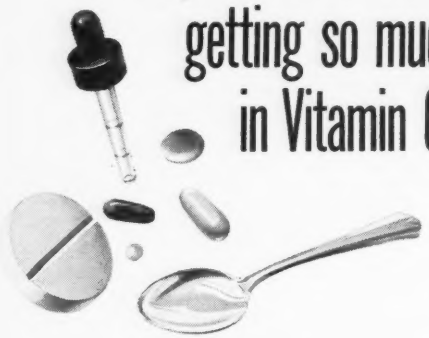
Why is Pfizer Sodium Ascorbate getting so much use in Vitamin C formulations?



Because, Pfizer Sodium Ascorbate, a neutral salt, does *not* give products an acid taste. It mixes well with substances that aren't compatible with acids. And you can combine sodium ascorbate and ascorbic acid to form a buffer system that will allow a pharmaceutical preparation to be brought to the desired pH.

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Oil-water emulsions made with Carbopol 934 have excellent stability to mechanical shear and temperature aging. Films from these emulsions have excellent water resistance. A wide range of cosmetic and industrial products can benefit from these properties, since Carbopol 934 has been used successfully to emulsify mineral oil, corn oil, linseed oil, kerosene, hexane, and similar liquids in water.

For complete information write *now* to Dept. RB-1, B.F.Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

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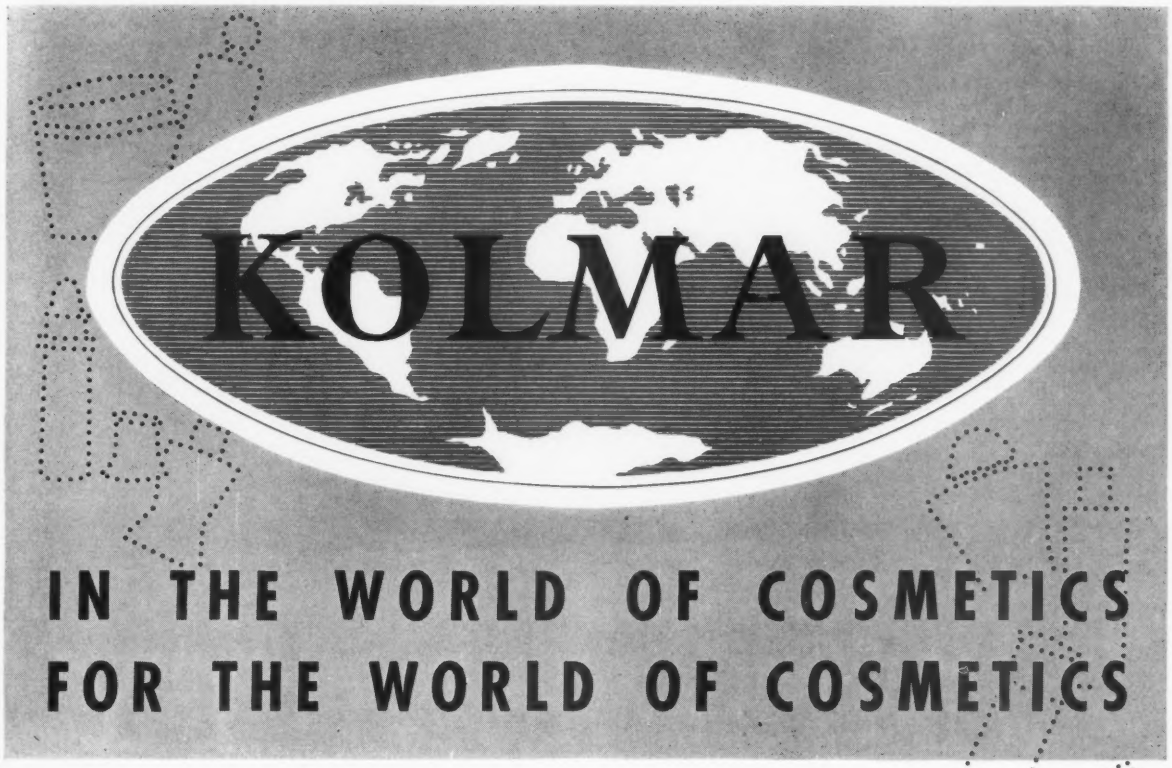

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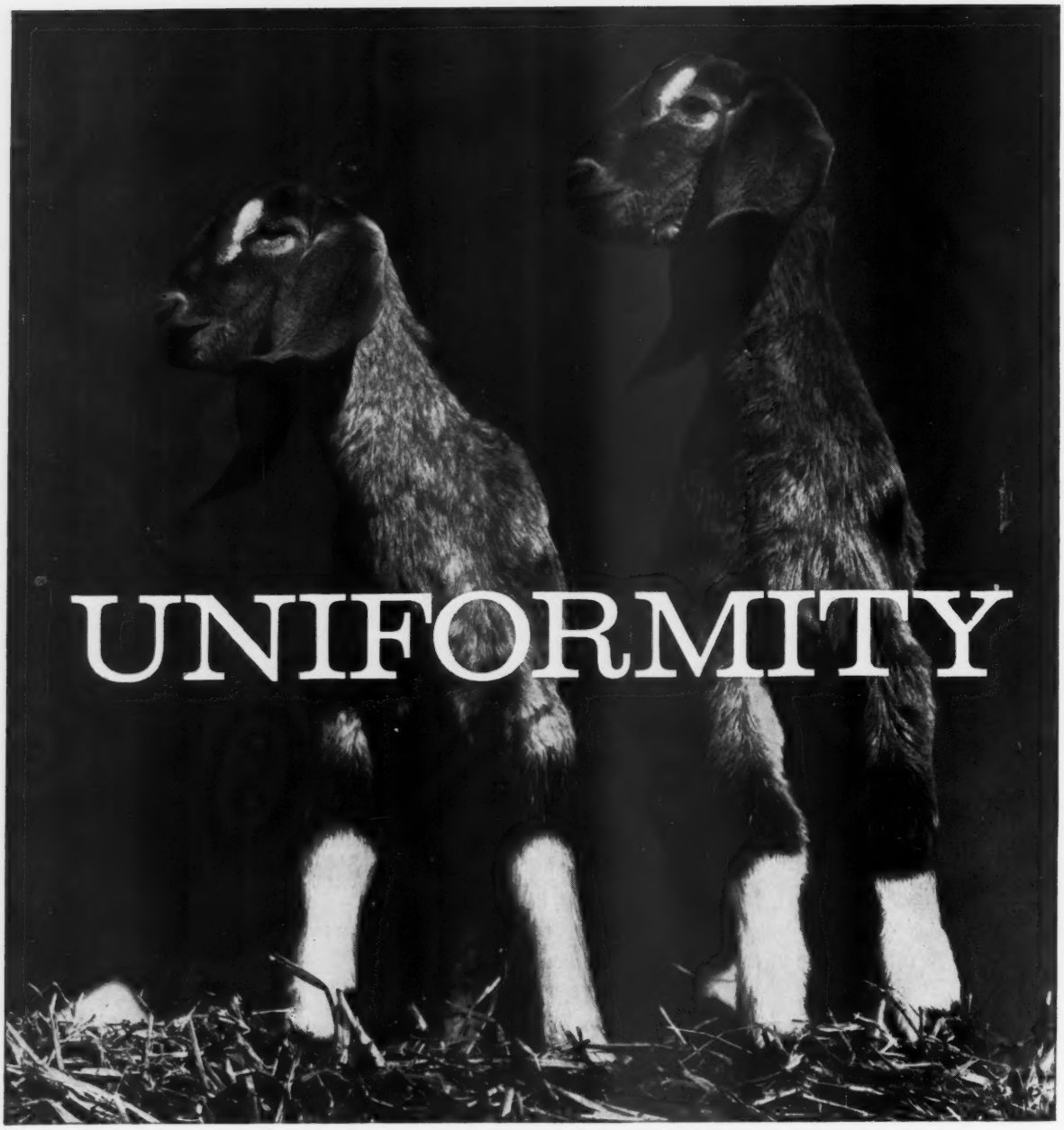

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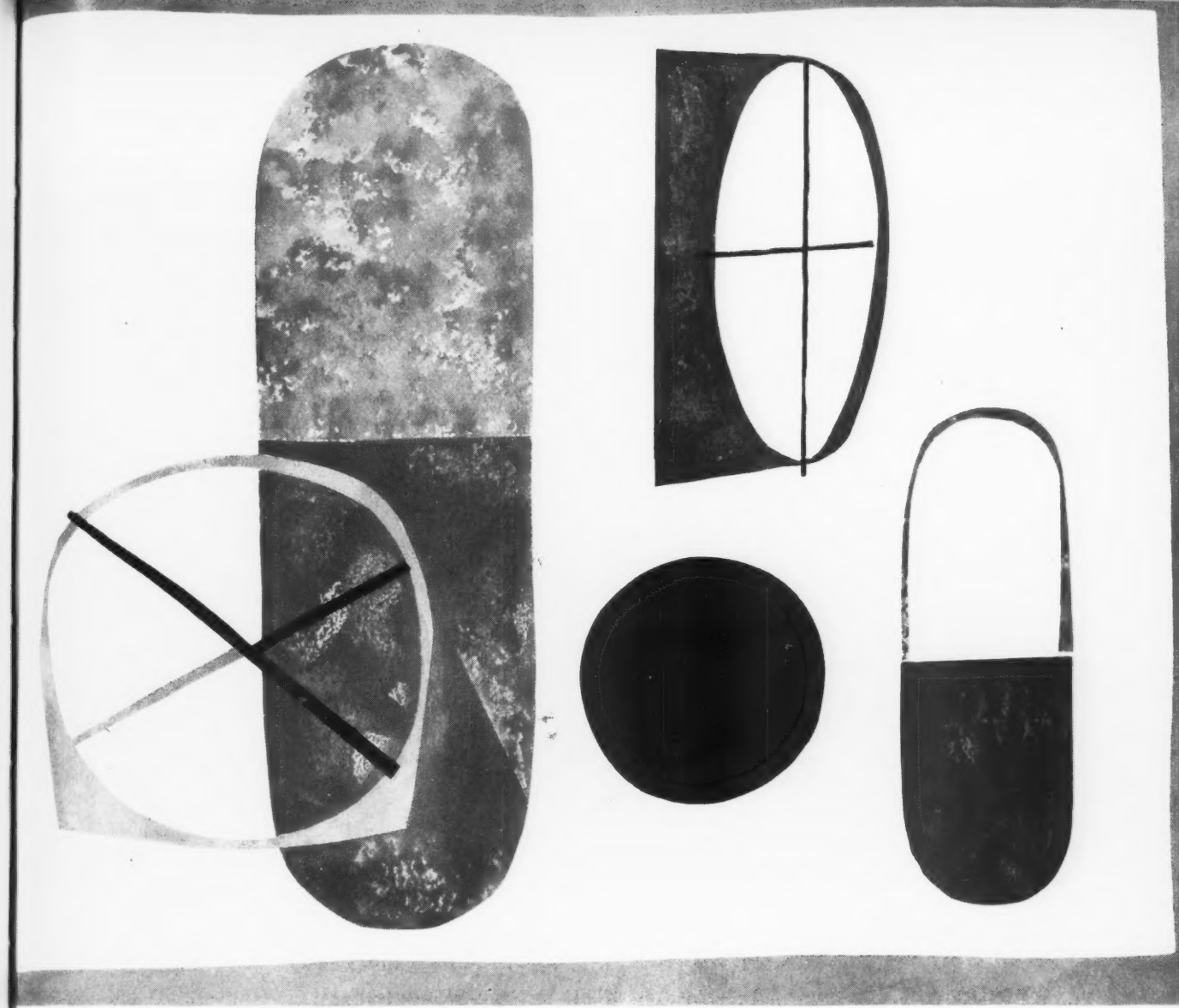

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MILK SUGAR

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NEW!

2 TEST REPORTS OF GREAT SIGNIFICANCE

DR. LOUIS C. BARAIL
Consulting Biochemist and Toxicologist
10 EAST 43RD STREET
NEW YORK 17, N. Y.

No. T-17

The Miranol Chemical Company, Inc.
275 Coit St., Irvington, N. J.

EYE IRRITATION TEST
REPORT

We have tested your sample of 20 per cent Miranol C2M for eye irritation according to the method of Draize, Woodard and Calvery. 0.1 cc of the sample was instilled in the conjunctival sac of rabbits. One eye was used for the test, while the other eye was used as a control. The eyes of the animals were observed after 1, 24 and 48 hours.

Results

The following results were obtained on the cornea, iris and conjunctiva:

	Instilled eyes		
	1 hour	24 hours	48 hours
Cornea	0	0	0
A. opacity	0	0	0
B. area of cornea involved	0	0	0
Iris		0	0
Conjunctiva	0	0	0
A. redness	0	0	0
B. chemosis	0	0	0
C. discharge	0	0	
Totals			
Control eyes Totals	0	0	0

Conclusions

The above results showing the total readings of 0, 0 and 0 after 1, 24 and 48 hours indicate that the submitted sample of Miranol C2M is not irritating to the eyes of rabbits.

Respectfully submitted

Dr. Louis Barail

Dr. Louis C. Barail

DR. LOUIS C. BARAIL
Consulting Biochemist and Toxicologist
10 EAST 43RD STREET
NEW YORK 17, N. Y.

The Miranol Chemical Company, Inc.
275 Coit St., Irvington, N. J.

No. T-18

SKIN IRRITATION TEST
REPORT

We have examined a sample of 20 per cent Miranol C2M to determine whether it contains primary skin irritants. The method used was the animal introdermal single injection method.

0.5 cc of a 5 per cent solution of the sample was injected with aseptic precautions intradermally into rabbits. As a control, 0.5 cc of a 5 per cent solution of olive oil castile shampoo was also injected under the same conditions into the animals.

Twenty-four hours after the injection, the animals were observed for the presence of skin irritation in comparison with that of olive oil castile shampoo.

Results

Samples	Reaction on skin
20 per cent Miranol C2M	–
Olive oil castile shampoo	++

Legend
– No irritation
\+ Slight reaction
\++ Definite reaction
\+++ Very definite reaction
\++++ Very definite and spreading reaction

Conclusion

The above results indicate that the sample of 20 per cent Miranol C2M is not irritating when injected intradermally into rabbit skin.

Respectfully submitted

Dr. Louis Barail

Dr. Louis C. Barail

A NON-IRRITATING AMPHOTERIC SURFACTANT

MIRANOL C2M CONC.*

MIRANOL C2M CONC. is a new amphoteric surface active agent which is completely non-irritating as proved by laboratory tests. Chemically it is a dicarboxylic analogue of MIRANOL CM CONC., the coconut derivative of the MIRANOL M SERIES. It has an active content of 40%. The product has a pH of 7.8 measured directly and 8.2 in 20% solution in local tap water.

As the intradermal injection test report shows (the severest test of its kind) MIRANOL C2M CONC. caused no reaction (-) whereas the accepted standard for mildness (Olive Oil castile shampoo) caused a "definite reaction" (+ +). Water causes a slight reaction, thereby proving to be more irritating than MIRANOL C2M CONC. Practically all surface active agents show irritation ratings of + + to + + + or higher.

Where the complete absence of irritation is desirable, MIRANOL C2M CONC. should be used. It is recommended for the formulation of shampoos, hand soaps, rug shampoos and all household and/or industrial cleaner formulations. As a shampoo, MIRANOL C2M CONC. is a profuse and instant flash foamer, even on first application. Due to its substantivity, the hair is left in excellent and manageable condition, simulating that of a cream rinse. Crystal clear products with exceptional temperature stability can easily be formulated.

MIRANOL C2M CONC., when combined with normally irritating surfactants, will materially reduce or even completely eliminate all irritating properties.

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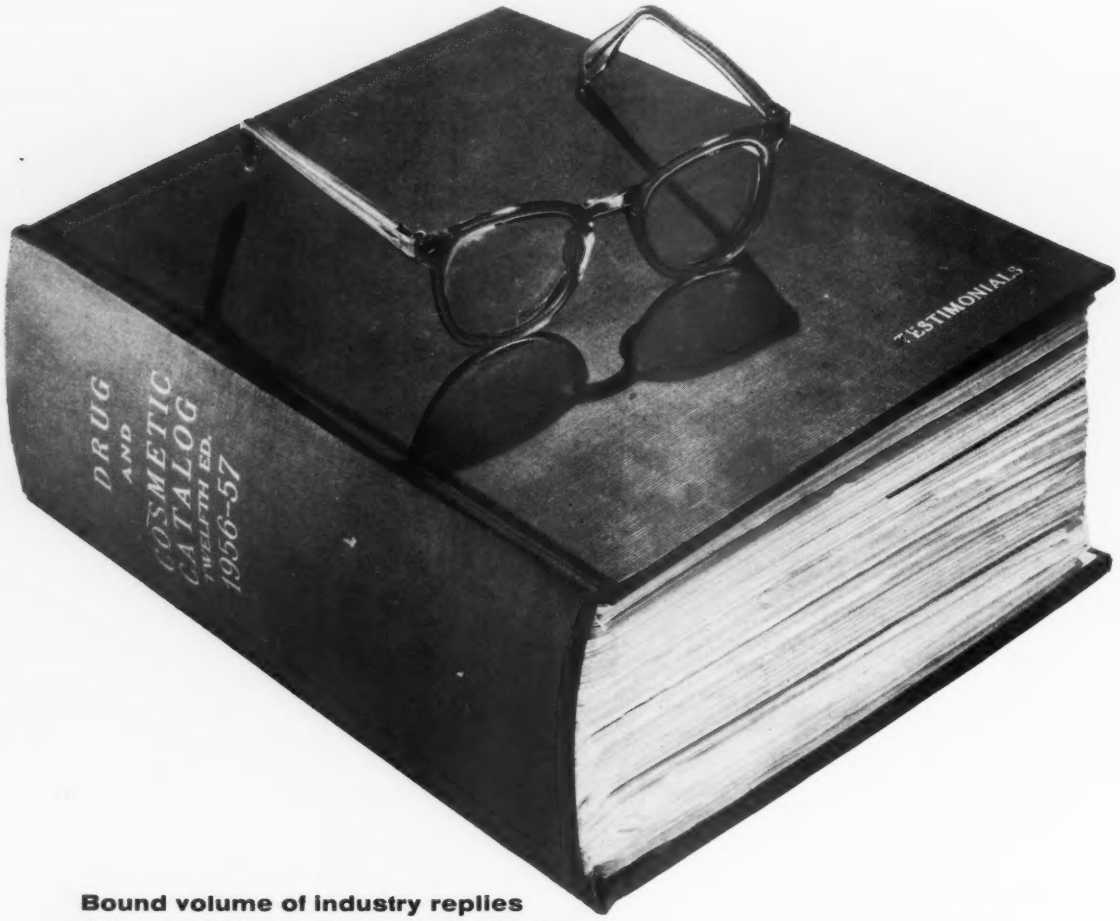

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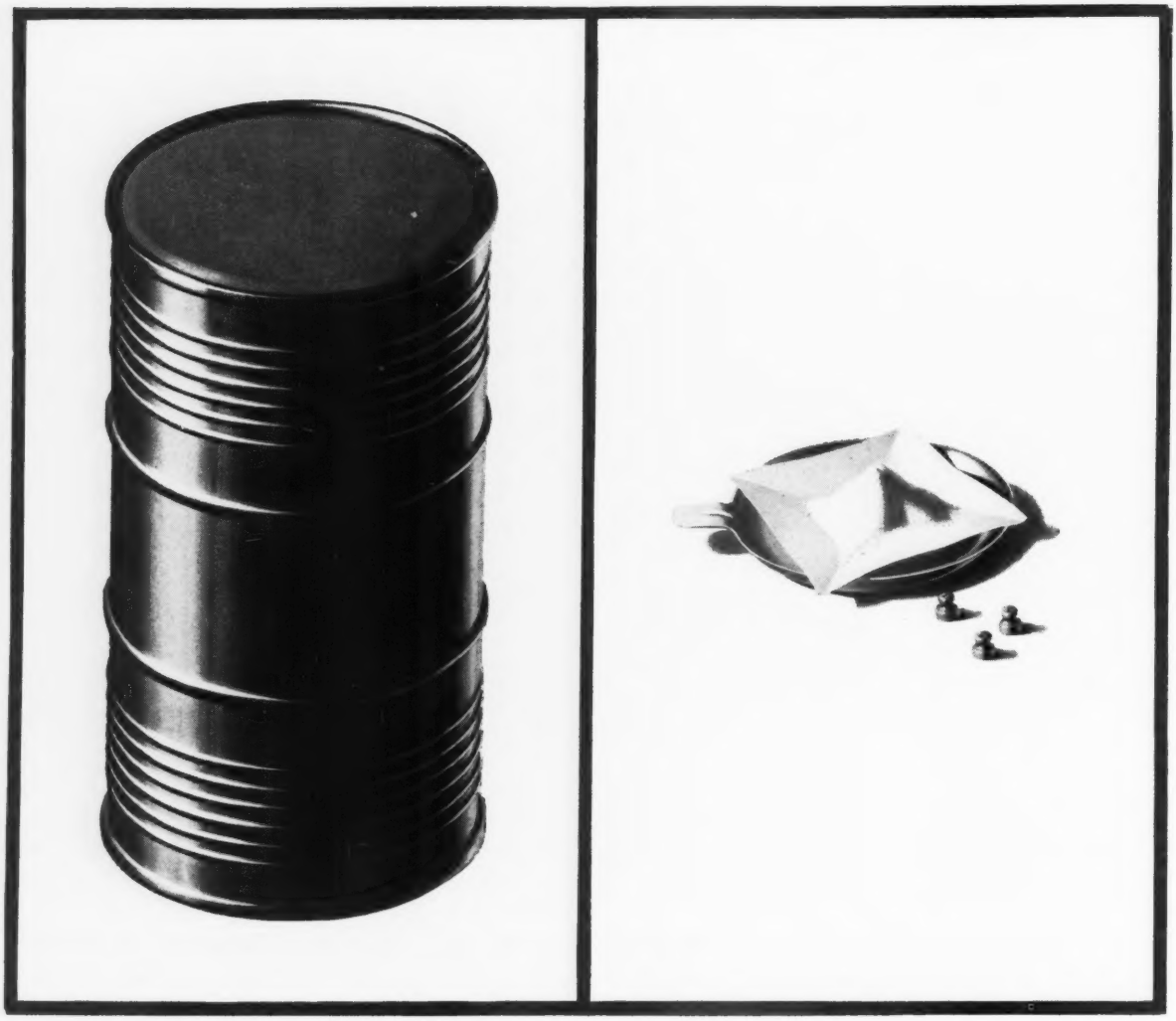

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Keeping Posted

Trade Marks in 1957

During 1957, American corporations acquired 17,234 new trademarks, compared with 20,758 registrations in 1956, and 18,208 in 1955, according to the U. S. Trademark Association, which comments that the decline from 1956 results largely from the unusually high level of registrations in 1956 when the U. S. Patent Office worked off a backlog of waiting applications. Applications for trademarks amounted to 21,390 in 1957 compared with 22,045 in 1956, indicating continued high interest in new products as companies face increased competition. A recent survey of several hundred industrial companies revealed that they expect to get from 30 to 80 per cent of their growth in the next three years from new products.

During the past year, Florida, North Dakota, and Vermont enacted the Model State Trademark Law approved by the association, thus bringing to 20 the number of states with this law on their books. Also during 1957, Ohio and Utah passed legislation to provide for registration of service marks, which cover services as distinguished from trademarks which relate to products. In addition, Ohio passed a law to provide for the registration of trade names.

On the international scene, new trademark statutes went into effect in 1957 in Kenya and Libya and a compulsory registration law is now in effect in Turkey. The Netherlands amended its trademark statute and the Republic of India's Extension of Laws Act, No. 62 of 1956 and the Indian Trademarks Act, 1940 have been extended to the state of Jammu and Kashmir.

"A decision of great significance, particularly to chemical and drug companies," says the association, "involved an attempt to register as a trademark the word Cortrophin for the drug corticotrophin. Despite a competing drug manufacturer's objection that this would permit the applicant to appropriate an apt abbreviation of a product name which all producers should be able to use, the court authorized the registration."

In infringement cases the court found that a likelihood of confusion existed in the marks 4-Way and 7-Way for cold remedies. However, no likelihood of confusion was found by the court in the marks Micturin for urinary antiseptic tablets, and Mictine for non-mercurial diuretic tablets.

In a decision of great importance to all trademark owners, says the association, the Patent Office ruled that an insecticide manufacturer's violation of a state law pertaining to the marketing of its product deprived the company of rights in the trademark during the period of non-compliance. As a consequence, a competitor who subsequently adopted a similar mark and who normally would have been subject to the other's paramount rights was held to be the one entitled to registration.

The U. S. Patent Office found a likelihood of confusion when the trademark Look was used for a magazine and when it was used for face cream, bar soap, and a liquid detergent. Likewise a likelihood of confusion was found to exist between Wildroot for a shampoo, hair tonic, dandruff remedy, wave set, and hair beautifying preparation, and Magic Root for preparations for treatment of hair, callouses, and tired, aching feet. The Patent Office found no likelihood of confusion in the following marks: Festival for perfumes, toilet water and cosmetic items, and the same mark for cold waving lotion sold for professional use; Dolcin for an over-the-counter analgesic and Dolamin for a prescription analgesic; Princess Pat for perfume and cosmetics and Love-Pat for pressed powder make-up; Glow for hair dressings, rinses, sprays, colorings, creams, permanent sets and dryers, and Glo-Ray for lanolin hair dressing; Anacin for a general analgesic, and Fenesin for an anti-arthritic drug; Similac for a liquid mild food product for infants, and Sanalac for milk products.

Cutter Vaccine Damages

The jury awarded damages totaling $147,300 against Cutter Laboratories on implied warranties, but stated in the verdict that it did not consider Cutter as being negligent "either directly or by inference." "With

(Illustrations represent actual crystals of 'Roche' vitamin A palmitate and acetate and of 'Roche' dry vitamin A acetate granules, under high magnification, using shadow technique.)

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regard to the law of warranty," the jury added, "We have no alternative but to conclude that Cutter marketed vaccine which caused the plaintiffs to come down with poliomyelitis."

The jury awarded $125,000 to Arna Elizabeth Gottsdanker, 8 years old, daughter of Robert M. Gottsdanker, associate professor of psychology at the University of California at Santa Barbara. They awarded $6,500 to the parents. The Gottsdanker suit was for $300,000. The jury awarded $14,000 to James Ranell Phipps, of Monrovia, and $1,800 to his parents. The Phipps suit was for $65,000.

More than forty other suits have been filed in the country. Cutter is being sued for more than $10 million in all the combined actions. Melvin M. Belli of San Francisco, attorney for the plaintiffs in these first two actions, represents fourteen more clients suing for a total of $5 million. However, he said he expects to reduce their claims to about $2 million.

Judge Thomas J. Ledwich, who tried the cases in the State Superior Court of Alameda County, California, instructed the jury to award a judgment against Cutter if the vaccine sold in 1955 had failed to live up to "implied warranties as imposed by the law." "If you find that the vaccine contained infectious amounts of live virus and that the vaccine caused them to become infected, implied warranty is applicable," he said. Walter E. Sedgwich, attorney for Cutter, said he would appeal.

Nail Polish to Shoe Polish

Revlon, Inc., has truly undertaken diversification in its operations through the purchase of the Knomark Manufacturing Co., of Brooklyn, N. Y., described by Revlon as the "largest manufacturers of shoe polishes and related consumer products." Knomark's principal trademark products include "Esquire" boot polish, "Scuff-Kote", "Lano-Wax", and "Lanol-Wite." The acquistion of the privately-owned corporation, established in 1927, was an outright purchase with no exchange of stock involved. Present operating policies and executive personnel will be retained.

Revlon president, Charles Revson, says that this purchase is in line with the company's decision to diversify and expand its products and marketing in the area of staple package goods outside of its own recognized field. The company says that "internal diversification at Revlon has already resulted in the establishment of Thayer Laboratories for the development of proprietary and ethical drugs."

FDA and PHS Budget Requests

Despite Sputnik and the economies it is calling for in Federal spending so as to release more money for the ICBM program, the FDA budget request of the administration is up one per cent over that estimated for fiscal 1958. The administration requests $10,664,500 for fiscal 1959, compared with $10,554,500 estimated to be spent in fiscal 1958, ending June 30. However, this request is far from the recommendations of the Citizens' Advisory Committee of 1955, which advised that FDA funds be increased three to four times within five to ten years. Also, the new FDA administration, long urged, has been deferred.

Likewise, the U. S. Public Health Service gets more money for its activities. Although its total budget request is 7.7 per cent below that of the past year, the cuts are mainly in hospital construction costs. National Institutes of Health are given as much as the previous year to conduct research.

The total requested for the USPHS for fiscal 1959 is $522,089,000, against estimated 1958 of $565,700,000. These amounts are broken down as follows:

	Fiscal 1958	*Fiscal 1959*
Venereal Disease Control	4,415,000	4,400,000
TB Control	7,000,000	5,386,000
Assistance to States	22,592,000	22,889,000
Communicable Disease Control	7,050,000	6,200,000
Sanitary Engineering activities	12,640,000	12,815,000
Grants for Waste Treatment Plants	45,000,000	45,000,000
Hill-Burton	121,200,000	75,000,000
Hospitals and Medical Care	44,399,000	44,309,000
Indian Health activities	40,100,000	40,225,000
Construction of Ind. Health facilities	3,130,000	2,374,000
NIH (Gen'l research and ervices)	14,026,000	17,742,000
Mental Health activities	39,217,000	37,697,000
Nat'l Heart Institute	35,936,000	34,712,000
Cancer Institute	56,402,000	55,923,000
Dental Health activities	6,430,000	6,293,000
Arthritis & Metabolic Diseases	20,385,000	20,592,000
Allergy and Infectious Diseases	17,400,000	17,497,000
Health Research Facilities	30,000,000	30,000,000
Neurology and Blindness Activities	21,387,000	20,727,000

The research grants will support further research in the development of several new vaccines, including vaccines to prevent widespread upper respiratory diseases; the screening of drugs which are possible anticancer agents; development of improved steroids or related chemicals for arthritis; evaluation of tranquilizing drugs; and development of better methods for the care, treatment and rehabilitation of mental patients.

Max Factor to Build New Plant

Max Factor & Co. has purchased a 13-acre plant site in the newly developed Hollypark Industrial Center, Hawthorne, California. The Industrial Center contains 35 modern light manufacturing plants which have been completed or are in various stages of planning and construction. On this site will be built Factor's major cosmetic manufacturing plant and warehousing facilities in Southern California. The new one-story building of 250,000 square feet will be of modern design. Total investment in land, building, and equipment will exceed $3 million.

Robert Hardt—Man of the Year

Dr. Robert A. Hardt, vice-president of Hoffmann-La Roche, Inc., was honored January 9, as American Druggist's 1957 Man of the Year in Pharmacy at the January Luncheon Meeting of the Pharmaceutical Advertising Club of New York. PAC President Arthur C. Emelin, of J. B. Roerig & Company Division of Chas. Pfizer & Co., president and Dan Rennick, editor of the American Druggist, awarded the award plaque to Dr. Hardt.

Dr. Hardt was named Man of the Year because of

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his work as chairman of the organizing committee of the Fourth Pan-American Congress of Pharmacy and Bio-chemistry, held in Washington last November. The Man of the Year selection is made by a panel of drug industry leaders, including the presidents and secretaries of all national, state, and local pharmaceutical associations and boards of pharmacy, the deans of all accredited colleges of pharmacy, and the editors of all national, sectional, and state drug publications.

In 1955, Dr. Hardt was one of the five top nominees for the award, as a result of organizing a Rensselaer Polytechnic Institute program at which 1,000 social science teachers learned how the drug industry serves the nation. Dr. Hardt is past president of the American Pharmaceutical Manufacturers Association, and of the National Pharmaceutical Council.

Mrs. Mennen Honored

Mrs. Catherine Mennen, wife of William G. Mennen Jr., executive vice-president of the Mennen Company, was honored at a luncheon in her honor tendered by My Baby Magazine. Mrs. Mennen was presented with a silver bowl inscribed To Catherine Mennen in appreciation of her contribution to the Lady-in-Waiting; My Baby Magazine. Peg Rivers, editor of My Baby, told of the work Mrs. Mennen has been doing to "emancipate anticipation." Within the past year Mrs. Mennen has been sponsoring programs of education and entertainment for the Lady-in-Waiting in major cities. The first was in New York where 3,500 mothers-to-be crowded into the Hotel Astor to hear an outstanding obstetrician discuss Health and Happiness for the Lady-in-Waiting; Mimi Benzell sang her favorite lullaby; and Mrs. Mennen talked about the importance of being attractive while waiting. From New York, Mrs. Mennen went to Boston, Pittsburgh, Cleveland, Columbus, Philadelphia, Baltimore, Washington D. C., and Atlanta. This year Mrs. Mennen plans to hold events for expectant mothers in St. Louis, Houston, New Orleans, Miami, Los Angeles, San Francisco, Seattle, Detroit, and other cities.

Abbott Laboratories

Telling the New York Security Analysts that the pharmaceutical industry has gained 1,100 per cent, or from $150 million in sales in 1939 to $1.7 billion in 1957, and that the industry had spent $127 million for research in 1957, Abbott Laboratories President, Dr. Ernest H. Volwiler, listed the major problems facing the industry:

1. Rising costs.
2. Need for greater promotional activities due to intense competition among 200 major producers in the United States.
3. Uncertainty of government policies including the threat of "crash programs" and government direction on research rather than major attention to basic research.
4. Difficulty in getting enough competent scientists for research.

Dr. Volwiler said that Abbott Laboratories is active in 41 countries, and is manufacturing in 19. About 75 per cent of sales are in the United States and Canada. Abbott spent about $7 million in capital outlay in 1957, and will spend about the same amount in 1958, and a total of $30 million in the next five years. The company will start construction of facilities which will double research space when completed in two years. Research personnel will be added as fast as space becomes available. The company is spending about 5 per cent of sales for research.

Glycerine Research Awards

First Award of the Sixth Annual Glycerine Research Awards was given last month to Dr. James Tullis of the Blood Characterization and Preservation Laboratory, Jamaica, Mass., for his work in the glycerine freezing of human blood for long-term preservation. The First Award consists of $1,000 and an honor plaque.

The Second Award, consisting of $300 and an honor certificate, was conferred on Dr. Guido Marinetti, assistant professor of biochemistry at the University of Rochester School of Medicine and Dentistry, for extensive research on the analysis, biosynthesis and chemical structure of phospholipids, derivatives of glycerine found in the tissue of living cells. This work makes possible for the first time, the analysis of individual phospholipids directly in a complex mixture, and has proven the most reliable method for testing their purity.

Two Canadian researchers shared the Third Award, consisting of $200 and an honor certificate, in recognition of their work on the glyceride composition of fats. They are Dr. Henry R. Sallans and Dr. C. G. Youngs of the Prairie Regional Laboratory, National Research Council, Saskatoon, Saskatchewan, Canada.

The awards are given annually by the Glycerine Producers' Association, New York. These awards, conferred for research conducted during 1957, were presented to the winners on January 23 at a luncheon meeting of the Glycerine Producers' Association at the Waldorf-Astoria Hotel, New York.

Ruling in Bayer v. Sterling Suit

A unanimous ruling by the Third Circuit Court of Appeals in Philadelphia last month reversed a ruling by U. S. District Judge William F. Smith of the U. S. District at Newark, N. J., in sustaining the right of Farbenfabriken Bayer A. G., Leverkusen, West Germany, to continue suit against Sterling Drug for an accounting of assets deriving from a former partnership of the two companies in Latin America. Judge Smith had upheld Bayer's right to bring an anti-trust action against Sterling, but had dismissed an accompanying suit for an accounting of former partnership assets. He held that the disability of one time German enemies to sue for property formerly subject to vesting by the Alien Property Custodian had not been removed by either statute or treaty.

In reversing this ruling, Judge John Biggs, Jr., chief judge of the Third Circuit Court of Appeals, held that a Congressional Joint Resolution and a proclamation by President Truman officially terminating the state of war with Germany had the effect of wiping out

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"the suspension of the right of a German national to bring suit in the United States."

Honored for Polio Work

The National Foundation for Infantile Paralysis celebrated its twentieth anniversary by dedicating a polio Hall of Fame at Warm Springs, Ga. on January 2. Honored by bronze busts were seventeen men and women who played leading roles in the successful fight to control paralytic polio.

Of the seventeen, four were deceased scientists. They were:

Dr. Jacob von Heine of Stuttgart, Germany, who first clearly described polio clearly in 1840; Dr. Oskar Medin of Stockholm, who, in 1907, first recognized polio as an acute infection; Dr. Ivar Wickman, also of Sweden, a pioneer in 1909 in studying polio as an epidemic; and Dr. Karl Landsteiner of Vienna, who demonstrated that polio could be transmitted to an experimental animal.

Eleven living scientists were honored. They are:

Dr. Jonas E. Salk, developer of the vaccine now used; Thomas M. Rivers, medical director of the polio foundation and chairman of the committee that supervised the successful 1954 field trials of Salk vaccine; Dr. John R. Paul, Yale University virologist, who contributed significantly to knowledge of the disease; Dr. Albert Sabin of Cincinnati University, leader in the search for a live virus vaccine; Dr. Thomas Francis Jr., University of Michigan epidemiologist, who directed the 1954-1955 evaluation program demonstrating the safety and effectiveness of Salk vaccine; Dr. Joseph L. Melnick of the National Institutes of Health, who as Yale University scientist studied polio incidence in many parts of the world; Dr. Isabel Morgan of Columbia University, who at Johns Hopkins University prepared an experimental vaccine from virus inactivated with formaldehyde and with it protected monkeys against paralytic polio; Dr. Howard A. Howe of Johns Hopkins, first to show that chimpanzees could acquire polio infection by mouth; Dr. David Bodian of Johns Hopkins, who proved that polio could be blocked by antibodies in the blood before reaching the central nervous system; Dr. John F. Enders of the Children's Medical Center, Boston, who won the Nobel Prize for discovering a method for growing polio virus in non-virus tissue.

The two others honored were the late President Franklin D. Roosevelt, and Basil O'Connor, president of the Foundation from its inception.

Blue Cross Limitations

At the start of 1955 almost two-thirds of the U.S. population had some type of health insurance protection, but the great majority was covered through employee groups, the Health Information Foundation reports in its two-year study, Non-Group Enrollment for Health Insurance. Of an estimated 35 per cent of the U.S. population *not* eligible for group coverage, only about a quarter were enrolled in Blue Cross or other health-insurance plans on a non-group basis.

HIF defines the non-group population as consisting mainly of self-employed persons, those over a certain age (usually 65) who are generally not eligible for health insurance protection, retired persons who no longer have group coverage through places of employment, and persons who work in places too small to have group contracts.

Non-group enrollment presents problems for those selling voluntary health insurance. For example, there is no automatic payroll deduction of premiums. Moreover, non-group subscribers often include a high proportion of individuals who have greater-than-average utilization rates for hospital services. However, many Blue Cross plans have worked out ways of encouraging non-group enrollment without upsetting their administrative and actuarial structures. HIF discusses these five chief enrollment methods:

1. Community enrollment on a county (or smaller) basis with a stated percentage of the population required. 2. Community enrollment on a county (or smaller) basis with no stated percentage of the population required. 3. Continuous year-around or over-the-counter enrollment on an individual sales basis. 4. Periodic open enrollment on a plan-wide basis, or less than plan-wide but larger than country-wide. 5. Group enrollment of non-employee groups such as farmers, fraternal and professional organizations.

C. D. Smith Pharmacal to Nestle-LeMur

The Nestle-LeMur Company has purchased the Carroll Dunham Smith Pharmacal Company as a further step into its expansion into the drug business. Joseph S. Lindemann, president of Nestle-LeMur, said the company paid $431,000 for 86,296 shares of the outstanding stock of Smith Pharmacal, and that it would issue on a share-for-share basis, 36,473 shares (25 per cent of the outstanding stock) of the pharmacal company. Nestle-LeMur also will solicit tenders of the voting stock held by the remaining Smith Pharmacal stockholders at $5 per share, which was the price paid for the 75 per cent of Smith Pharmacal shares acquired.

At this rate, Nestle-LeMur is paying at a value for all the stock of Smith Pharmacal of $818,460. The company has a sales volume exceeding $2 million, and has 190 employees. The company, founded in 1884, produces a complete line of pharmaceuticals, specializing in prescription specialties. Nestle-LeMur last year entered the ethical drug field by forming the LeMur Chemical division which produces a cool and dry-foot spray. The company, which operates plants in the Bronx and Long Island City, earned $300,000 in the first nine months of 1957. Its annual volume is about $9 million.

Pfizer to Screen for Cancer Drugs

Chas. Pfizer & Co. has entered into the largest agreement made with pharmaceutical manufacturers to date, with the Cancer Chemotherapy National Service Center of the National Institutes of Health under which the company will test its antibiotic filtrates and other organic compounds against cancer. Receiving approximately $1,200,000 of government funds during the first year of the testing, the firm will conduct its cancer studies at its Maywood, N. J. laboratories. In addition to the testing program, the agreement calls for studies directed toward develop-

ment of improved screening techniques. Pfizer will also perform pharmacological studies to determine the safety of compounds which appear to have sufficient promise to justify clinical trials.

Hardt on International Pharmacy

Commenting on the fact that the recent Pan-American Congress of Pharmacy and Biochemistry in Washington revealed a certain amount of resentment and misunderstanding by Latin Americans of the U. S. drug industry's policies and operations, Robert A. Hardt, vice-president of Hoffmann-La Roche, Inc., said before the Pharmaceutical Advertising Club (N. Y.) after receiving the American Druggist Man of the Year Award:

"We are big. Therefore we must be deflated because human nature demands that flaws in the characters of those occupying top positions must be pointed out. In addition, pharmacists and pharmaceutical organizations of other countries have not always been consulted or considered when policies affecting them have been initiated. This tends to create resentment."

He said that U. S. pharmacists, while attending international meetings, remain aloof and do not enter into discussions about problems in the belief that everything the U. S. does is correct and therefore requires no discussion.

Dr. Hardt offered a four-point program to improve international trade relations, which includes:

"1. Members of the pharmaceutical industry, at all echelons, should take a deeper interest in the manifold problems of our distribution system. This can be done by a closer reading of the international and domestic trade journals and attendence at trade conventions, including a certain number of state association meetings.

"2. The activities of the international pharmacy organizations such as the Pan-American Federation of Pharmacy and the Federation International Pharmaceutique should be followed closely.

"3. More travel abroad and more close personal relationships between pharmacists here and abroad should be encouraged.

"4. There should be less of the attitude 'We can't please them, so why try.' "

Norwich Pharmacal Activity

Norwich Pharmacal Company sales have approximately tripled in the last ten years, increasing from $11,447,000 in 1948 to something over $33,000,000 in 1957, Norwich vice-president, Howard A. Sumner told the Rochester Security Analysts last month, adding that profits have increased in a like ratio during the same period.

Mr. Sumner noted that Norwich's research program has been particularly successful "because it has resulted in the discovery of an entirely new and important group of drugs, the nitrofurins." He said that 500 of these chemicals have been synthesized in the company's laboratories, 26 have been patented, six are already in use in human medicine, and another has just received clearance from the Food and Drug Administration.

According to Mr. Sumner, Norwich has achieved balance and stability through diversification in three major categories: 1. Fine chemicals, primarily nitrofurins, used for disease control and growth promotion in animal husbandry. 2. Ethical drugs, also primarily nitrofurins, used in human medicine and also by veterinarians. 3. Consumer drug products, led by Pepto-Bismol, Norforms, and Unguentine, which were strengthened last year by the addition of Cees, a new cough syrup, and Nebs, a new analgesic tablet.

Ansco Abandons Fair Trade

Ansco has abandoned fair trade, stating that "as a result of a recent Supreme Court decision, and because of the repudiation of fair trade by a growing number of states, we feel it is no longer practical or possible for us to remain on fair trade." The company notified the trade by letter dated January 2, that fair trade would be abandoned as of January 15. The company claims that it was the first photographic manufacturer to sell its products under fair trade agreements —first in California and then nationally when the necessary enabling act was passed.

It will be recalled that Eastman Kodak Company declared that it was forced to abandon fair trade just a year before Ansco took the step.

A.I.C. Medal to Flett

Lawrence Flett, consultant, National Aniline Division, Allied Chemical & Dye Corporation, will receive the 1958 Gold Medal of the American Institute of Chemists at the annual meeting of the institute in April at Los Angeles. Mr. Flett was associated with National Aniline following his graduation from M.I.T. in 1918 until his retirement in 1955. He developed the first commercial synthetic detergent from petroleum, and holds more than 75 patents on detergents, dyes, antiseptics, and organic chemicals.

More Men Than Women Die

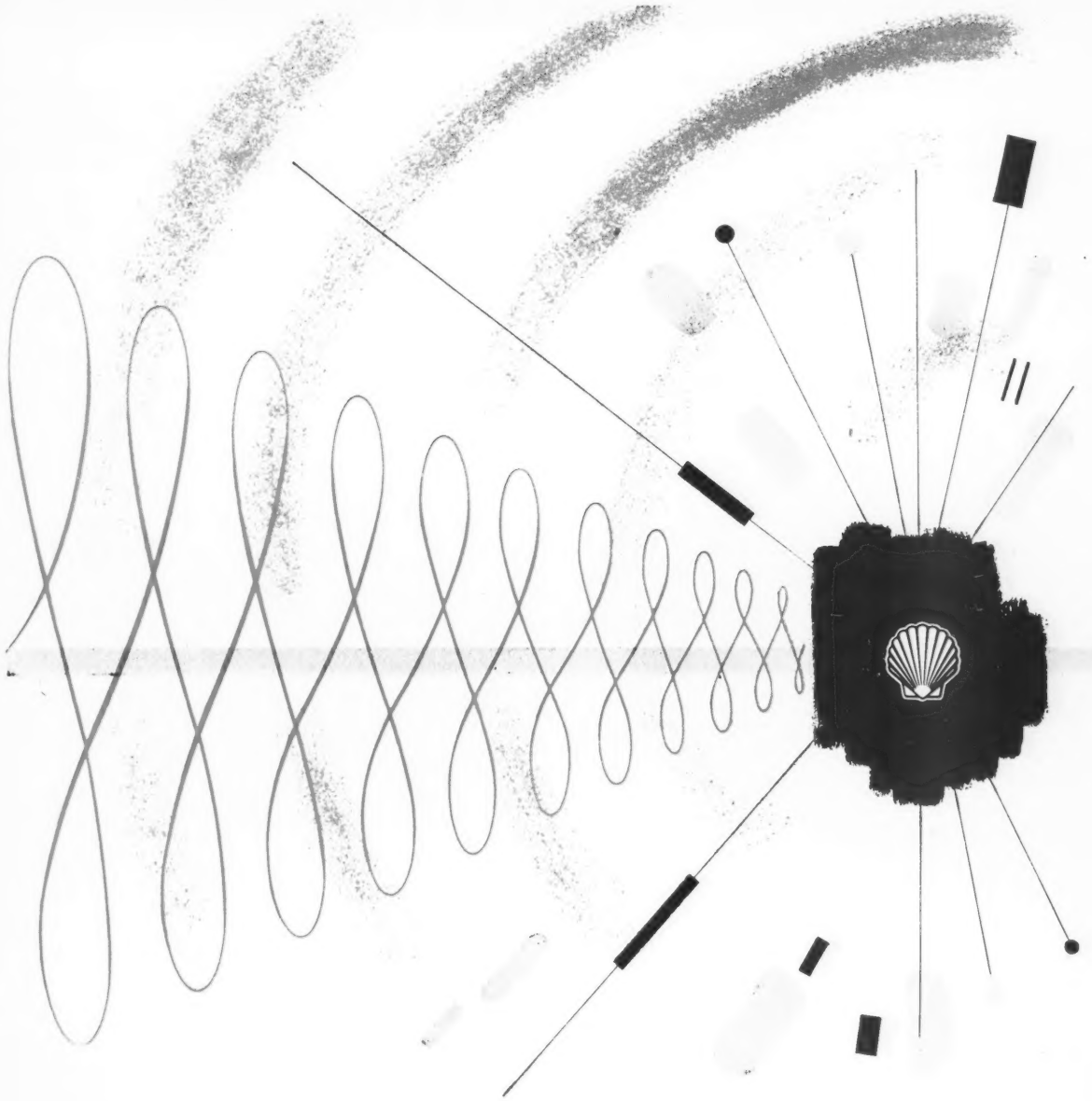
"Each year over 200,000 more men than women die in this country," says the Health Information Foundation. "Already there are 7,700,000 widows in our population, and the number is expected to rise sharply in the years ahead." In 1956, according to HIF. the death rate for all males was 9.6 per 1,000 population . . . a rate more than 50 per cent higher than for females.

Correction

We are informed by S. C. Johnson & Son, Racine, Wisconsin, that an error occurred in Frank Chilson's Management Forum in the September 1957 issue. The statement which is said to in error reads: "We don't need 24 storey glass towers like the one Wright designed for Johnson's Wax—which I'm told, they were never able to use for research purposes. . ."

William N. Connolly, Public Relations Vice President of the Johnson company, says:

"The research tower Frank Lloyd Wright designed for us has been in full use since it was opened in 1950 and currently houses about 100 chemists and technicians. From it has flowed a succession of new products and product improvements which have contributed much to our company's growth. (It is, incidentally, only a 15 storey tower and not, as your writer states, 24 stories."



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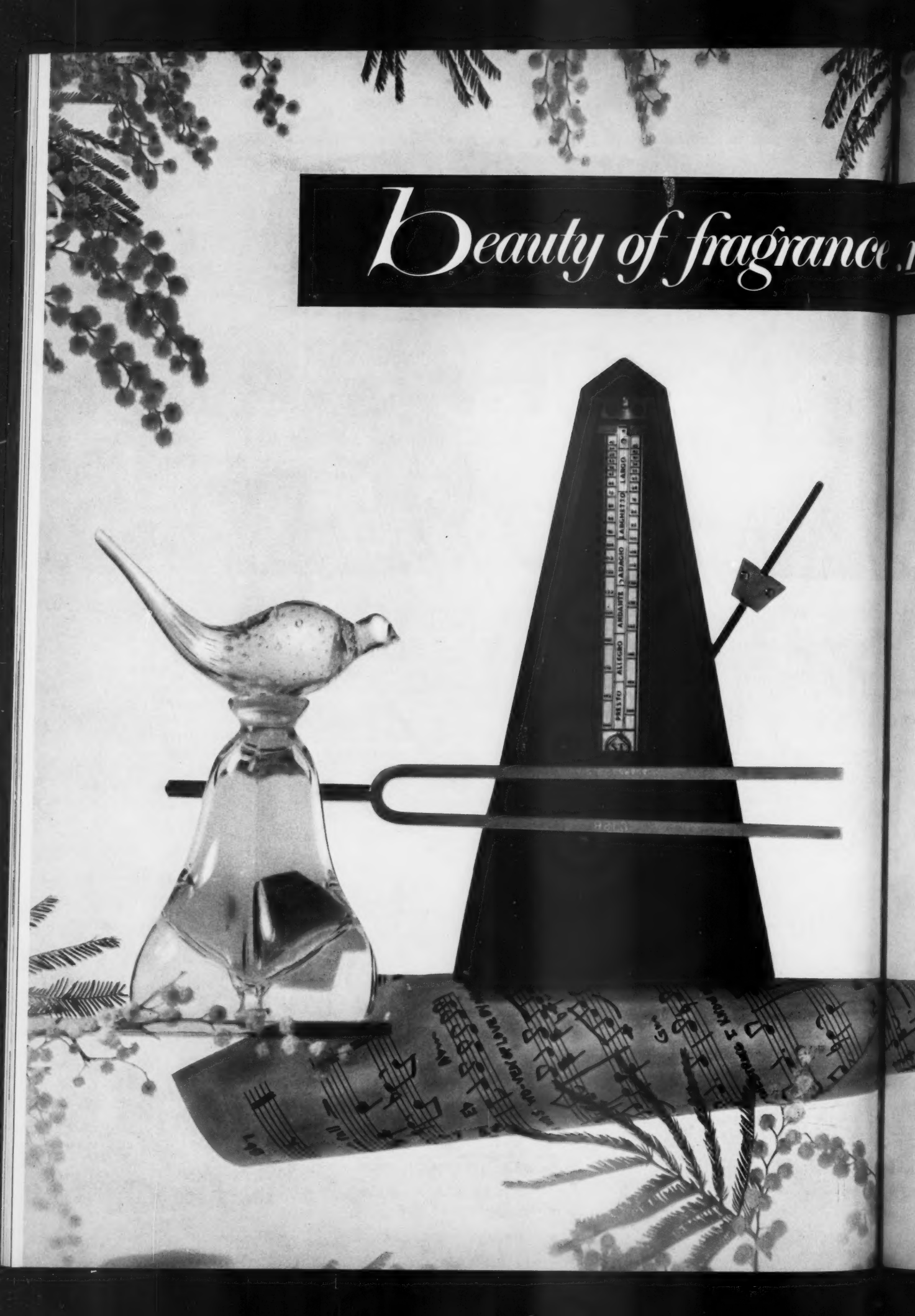
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The Fourth Pan-American Congress and its Significance

By GEORGE B. GRIFFENHAGEN
SECRETARY-GENERAL, FOURTH PAN-AMERICAN CONGRESS OF PHARMACY AND BIOCHEMISTRY

The Fourth Pan-American Congress of Pharmacy and Biochemistry convened in the nation's capital on November 3, last, attended by delegations from every one of the 22 self-governing countries of the Western Hemisphere, and by observers from sixteen countries in Europe, Africa, Asia, and Australia. Delegations ranged in size from single delegates from Paraguay and Haiti to 125 pharmacists from Peru. In all, 463 pharmacists from Latin America, and an additional 125 guests and observers, making a total of 588 foreign Congress members, attended this first international pharmacy meeting held in the U. S. since 1893. This was, of course, the largest international pharmaceutical gathering ever held in the U. S., and is, I am told, the largest group of Latin American delegates to attend a scientific meeting in the U. S. since the Eighth American Scientific Congress was held in Washington in 1940.

The Congress was divided into twelve different Sections dealing with all phases of pharmacy. Approximately 320 papers were presented by authors from 27 different countries. The pharmacists attending the Congress from Latin America represented every segment of pharmacy including manufacturer, exporter-importer, wholesaler, retailer, educator, and government administrator.

The Congress was organized with the assistance of every national pharmaceutical association in the U. S., and with the cooperation of the U. S. Department of State, the U. S. Public Health Service, the Pan-American Sanitary Bureau, and the U. S. Public Health Service International Health Division. Through the invaluable assistance of these experts, we were able to avoid any international incident which occasionally mars the best planned international gathering.

Notwithstanding one report to the contrary, the highest quality of simultaneous interpretation equipment and personnel was employed during the Congress converting the words of the speakers simultaneously into English, Spanish, French and Portuguese. The Documents Office often worked around the clock to get the documents and draft resolutions translated and mimeographed in English and Spanish.

In reply to those who may ask, "what is the purpose of international conferences?", I wish to take the opportunity of quoting a few passages from Pitman B. Potter's text *An Introduction to the Study of International Organization* (New York, 1948) one of the foremost textbooks on international organization.

"Among the nations of the world the first and basic type of relationship and activity to develop is that interchange of commodities and cultural contributions in general . . . [This] constitutes a broad and substantial foundation for all the more mature forms of international relations. One result is the appearance of private international associations of all sorts. Decades, and even centuries, before the national states were willing to join in any extensive formal cooperation, private persons were ready and eager to associate their activities across national frontiers. In a very literal sense it is possible to say that these private associations cover every field, every nook and corner of human endeavor."

"There are significant differences of interest among the different classes of private international organizations. The commercial concerns—exporters and importers and shipping syndicates—the international news agencies and similar bodies, desire to see a rapid and extensive development of free international communication and trade."

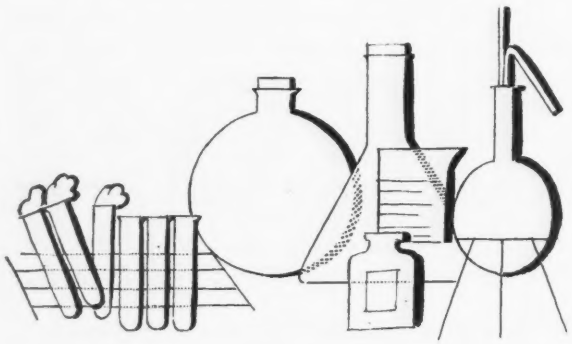
"On the other hand, manufacturing concerns enjoying a national monopoly of one sort or another, labor groups enjoying a similar fixed advantage over other groups, and banking houses confining their activities to national financial activities are usually active in opposition to the development of internationalism and cosmopolitanism. They oppose free

*Before A.P.M.A. Dec. 9, 1957

trade, free migration, and the establishment of international bureaus to control and adjust national competitive activities. International cooperation appears to them to be either positively dangerous or at least foolish and unnecessary, depending upon whether their advantage is natural or depends upon national legislation. All they demand in the international field is freedom to sell their goods abroad."

Potter concludes by explaining that "this small measure of freedom can hardly be obtained except by international reciprocity and agreement."

It has been said that "discussion of resolutions (during the Fourth Pan-American Congress of Pharmacy and Biochemistry) took endless time, and most of the controversies were pointless." Others have indicated that most of the discussions were not long enough, and the debate was far from "pointless." The purpose of the international conference is for the discussion of problems of mutual interest on an



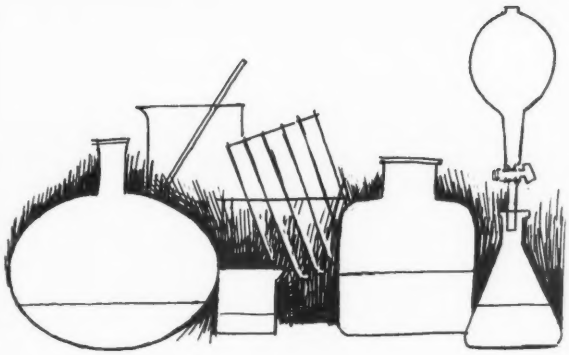
international level but, far too few U. S. pharmacists took advantage of this opportunity, even though they were often reminded that all pharmacists had the right and privilege of the floor. While I was driving one group of Brazilian pharmacists to the airport after the Congress, I asked them what phase, if any, of the Congress they were disappointed in. The group, which included Dr. Goulart, the head of the Brazilian Delegation; Dr. Scheinkmann, Executive Director of the Brazilian Pharmaceutical Manufacturers' Association; and Dr. Lago, Editor of *A Gazetta da Farmacia*, leading pharmaceutical publication in Brazil, heaped praises on the organization, the hospitality, the social activities, and most every other phase of the Congress. Their only disappointment was that the U. S. Delegation did not actively enter into more discussions and debate. These delegates had traveled thousands of miles, at a cost far exceeding our cost of travel to their country because of poor exchange rates, only to have many U. S. pharmacists indifferent to participation in healthy discussion and honest debate.

It is true that our Latin American colleagues introduced some resolutions which appeared to be hostile to the U. S. pharmaceutical industry. But, this was primarily for the purpose of trying to stimulate an open discussion of the problems and open the way for compromise. This, I am told, is a way of life throughout Latin America. Furthermore by these resolutions, we were able to learn what our Latin American colleagues are thinking about. When U. S. pharmacists took a firm stand against one of these so-called "hostile resolutions," the results were very rewarding. A resolution calling for the abolishment of patents on drugs, which had passed the Section on Pharmacy Laws and Ethics by a 17 to 2 vote, was tabled the following day by an 18 to 3 vote, due to some very convincing arguments put forth by several members of the U. S. Delegation, including the excellent presentation made by Dr. E. H. Volwiler on the Third Plenary Session.

This discussion was meaningful and the results were significant. It was not a move to pacify a hostile group of Latin Americans. It actually served as a basis of explaining to these Latin American leaders of pharmacy the true value of the patent system.

There has been considerable attention focused on one Congress Resolution which declared "that the agreement adopted by the General Assembly of the Pan-American Medical Confederation, held in Bogota, Colombia, in 1955, is prejudicial to the professional obligations and responsibilities of pharmacists and the pharmaceutical industry . . . and is incompatible with the national economics of the countries involved." This Bogota resolution was aimed at obtaining, through the Pan-American Medical Confederation, standardization of the laws for the registration of pharmaceutical products. Under the terms of the Bogota Resolution, the physicians, after studying the legislation affecting the registration of pharmaceutical products in force in their countries, would negotiate with their governments, to obtain the greatest possible uniformity of legislation.

At first glance, it might seem simple enough to look at the original Bogota Resolution and on this alone base a decision as to whether or not the original proposal is a sound one or not. And some reporters have apparently based a decision exclusively on a review of this resolution. Unfortunately the problem is nowhere near so simple. First of all, it is important to note that the physicians were to "study the legislation in their own countries" and the physicians "would negotiate with their governments . . . to obtain the greatest possible uniformity of legislation." Nowhere do we find any recommendations to seek the advice and consultation of the pharmacists; in fact pharmacy is conspicuous by its absence. Secondly, there have been many interpretations placed upon this seemingly simple recommendation. Some of these interpretations have gotten so far afield that one would wonder whether they were interpretations of the original agreement or entirely new proposals. For example, as recent as February, 1957, the *Revista* of the Pan-American Medical Confederation[1] carried an article favoring the "creation of an Inter-Ameri-



can Commission for the Control of Pharmaceutical Products."

But the entire matter appears to have originated not with the Bogota Conference, but rather with a very small group who met at the Canadian Club of the Waldorf-Astoria in New York City, April, 1955. From this meeting came the outline of procedures which represent the final documents that were approved at Bogota.[2]

Therefore, perhaps we should turn to the records and minutes of this committee, which has been called the Cooperating Committee of the Pan-American Medical Confederation, for a closer look at the interpretations which have been placed on the Bogota Resolution inasmuch as it was this group which originated the entire proposal. Among the items discussed at a meeting which was held in the Drake Hotel in Chicago on October 31, 1956 was the publication of a paper on "Health Registration Standards" calling for a strong Inter-American Food and Drug Agency. This paper had been submitted for publication in the *Revista* of the Confederacion, and the Committee requested that the following footnote be added:

And I quote from the Manifold Letter: "The Cooperating Committee of the Confederacion Medica Panamericana endorses the establishment of the Inter-American Food and Drug Agency for the purpose of testing and approving new drugs for the saving of life and prevention of disease. The Cooperating Committee further feels that if such a body is instituted, there should be no secondary control bodies established, since this would distinctly hinder rapid distribution of new life-saving drugs."

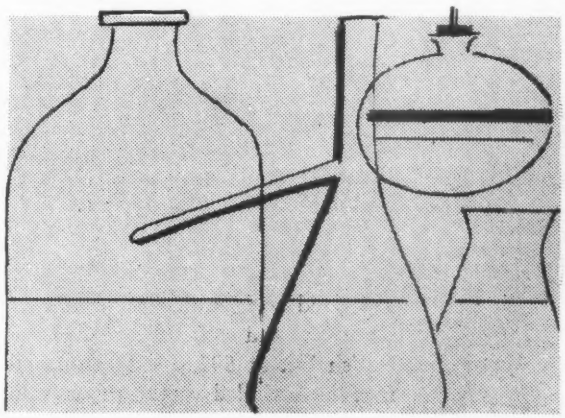
After reading this statement, our Latin American colleagues apparently were confused when the Chairman of the Cooperating Committee emphasized in his address before the Congress that his Cooperating Committee does *not* favor an international agency for registration of drugs. I certainly am surprised to note the wide publicity that this Cooperating Committee has received in the pharmaceutical press since the Congress as the "champion" who has fought against the idea of establishing "a super-national agency."

Reports originating with the Cooperating Committee prior to the Congress claiming full support of the American Pharmaceutical Manufacturers' Association and American Drug Manufacturers Association could only be interpreted by our Latin American colleagues that the U. S. pharmaceutical industry was only interested in one thing—obtaining standard laws so that they could export more products with greater ease or as the original resolution introduced by 13 countries to the Congress put it, "would open the door to an unwarranted invasion by foreign pharmaceutical products with the consequent prejudice both professional and economic to all the Latin American countries."

Furthermore, Latin American pharmacists are troubled that we speak only of standardizing the legislation in the Latin American countries. No mention is made of whether or not the U. S. is willing to make its own food and drugs law comply to such a model law. The U. S. Food and Drug Law is far from acceptable to all Latin American countries. As mentioned in Dr. Holland's address before the First Plenary Session of the Congress, Section 801(d) of our own Food and Drug Act dealing with export has been and is still often open to serious criticism.

Dr. Holland reminded the Congress that during "the late 40's and early 50's there were a series of hearings before committees of the United States Congress to explore the advisability of revising the export provisions of our Federal Drug Law. "The Food and Drug Administration is on record as favoring those legislative changes which will promote truthfulness, good products and fair dealing," reported Dr. Holland. However, favoring such changes is not correcting them, and certain of our Latin American colleagues are quick to remind us of this. While Section 801(d) prohibits export of adulterated drugs to countries where the law considers them adulterated and misbranded, it does not prohibit "dumping" adulterated or misbranded drugs in those countries which have no specific laws considering such items either adulterated or misbranded. Even though we argue that "the United States Congress has not seen fit to decide what specifications and standards should be

(*Continued on page 241*)



Temporary Hair Coloring

BY MORTON H. DANIELS, TECHNICAL DIRECTOR, PARIS COSMETICS, INC.

Hair coloring has been accomplished with the assistance of many substances. Vegetable materials, including henna, chamomile, sage, powdered walnut shells, indigo, logwood and Brazil wood, are now practically obsolete; henna and chamomile are still in use as packs and rinses, but with waning popularity. Metallic dyes are based upon salts of lead, silver, copper, bismuth, cobalt, nickel and cadmium and act by combining with sulfur compounds in the hair to form appropriately colored insoluble metallic sulfides; alternately, hair proteins reduce the salts with the precipitation of insoluble metallic compounds. Compound henna is a combination of henna with metallic salts, applied as a hot pack and "set" with sodium perborate solution. By far the most satisfactory means of permanent hair coloring is based upon the oxidation of certain amines and phenols, including para phenylenediamine and para toluylenediamine, para aminophenol, ortho aminophenol, hydroquinone, nitro para aminophenol, pyrogallol, resorcinol, para methylaminophenol, dihydroxynaphthalene, etc. These are oxidized to insoluble colored bodies on the hair by means of 20 volume hydrogen peroxide.

Temporary hair coloring, more popular now then ever as color rinses, serves many purposes. The rinse can highlight drab hair without change in shade, it can cover partially gray hair, or it can impart distinctive hues to completely gray or white hair. These color rinses are marketed as liquid concentrates or crystal mixtures. The latter consist of certified colors and acids.

Negatively charged hair protein is treated with the positively charged dye ion in acid solution; a loose compound is thus formed and the dye cannot be mechanically removed but is easily washed away by shampooing. A small portion of the concentrate (a capful of the liquid or the envelope of powder) is dissolved in one-half pint of water and is applied directly after the shampoo to impart a bright sheen or dazzling color and to remove precipitated hard water curd. A preferred means of application is by means of a plastic squeeze bottle supplied with a brush head. The rinse is brushed through the hair and allowed to remain for about 10 minutes. The treatment is concluded by rinsing the hair with tepid water followed by partial drying with a towel. The certified colors generally used are the following:
Red F. D. & C. Nos. 1, 2, 33. D. & C. Nos. 13. Ext. D. & C. Nos. 1, 10. Yellow F. D. & C. Nos. 5, 6. Blue F. D. & C. Nos. 1, 2. Orange Ext. D. & C. No. 1. Violet F. D. & C. No. 1. Black D. & C. No. 1. Green F. D. & C. No. 2. Ext. D. & C. No. 1.

The solid acids utilized in combination with the colors are tartaric acid, citric acid and sulfamic acid, the use of the latter being covered by British Patent 593,314. Modified ethoxylated lanolin (alcohol soluble) may be included in the mixture to make the hair soft and impart sheen.

Butyl or ethyl citrate or butylene glycol may be used as auxiliary solvents and coating agents, along with Specially Denatured alcohol 23A or acetone as the primary solvent to permit coating of the crystals, followed by evaporation. Suggested formulas, in parts by weight, are given below.

	Blond
Crystalline acid	*80.0*
Modified lanolin	*0.5*
Perfume oil	*0.25*
Alcohol or acetone	*25.0*
Butyl or ethyl citrate or butylene glycol	*3.0*
F. D. & C. Yellow No. 5	*7.5*
F. D. & C. Yellow No. 6	*7.5*

	Brown
Crystalline acid	*80.0*
Modified lanolin	*0.5*
Perfume oil	*0.25*
Alcohol or acetone	*25.0*
Citrate ester or butylene glycol	*3.0*
F. D. & C. Yellow No. 6	*3.0*
D. & C. Brown No. 1	*1.0*
F. D. & C. Green No. 2	*0.5*
F. D. & C. Violet No. 1	*3.0*
D. & C. Black No. 1	*4.0*
F. D. & C. Red No. 1	*8.0*
F. D. & C. Red No. 2	*2.0*

	Brown
Crystalline acid	*80.0*
Modified lanolin	*0.5*
Perfume oil	*0.25*
Alcohol or acetone	*25.0*
Butyl or ethyl citrate or butylene glycol	*5.0*
D. & C. Brown No. 1	*4.0*
F. D. & C. Green No. 2	*2.0*
F. D. & C. Violet No. 1	*3.0*
D. & C. Black No. 1	*10.0*
F. D. & C. Red No. 1	*1.5*

Manufacture of the crystal hair rinse consists of coating the crystalline acid with an alcoholic solution of the other ingredients, followed by

(*Continued on page 243*)

Fluorides and the Solubility of Powdered Tooth Enamel*

BY S. D. GERSHON, O. W. NEIDITCH AND R. H. C. LEE
RESEARCH AND DEVELOPMENT DIVISION, LEVER BROTHERS CO.

Sufficient data are now available to substantiate the conclusion that proper adjustment of the fluoride content of public water supplies is an effective and practical caries control measure (1-11). Approximately 1 ppm of fluoride, added as sodium fluoride or sodium fluosilicate, is the optimum concentration. The inhabitants of some 1700 United States communities are receiving the small quantities of fluoride ion recommended for the formation of caries-resistant teeth.

The epidemiologic[1] and experimental evidence relating fluoride to dental caries suggested that fluoride solutions applied to the external surfaces of teeth may decrease their susceptibility to caries attack. The first reports on the effect of topical application of fluorides were made by Bibby[12] and Cheyne[13] in 1942. Both reports presented evidence supporting the view that topical applications of fluoride solutions are effective in reducing caries incidence. Studies by Knutson et al.[14, 15, 16, 17] indicated that a reduction of about 40 per cent in the incidence of dental caries may be expected after at least four applications of a 2 per cent sodium fluoride solution. The studies revealed the necessity for more than one treatment; six treatments gave little or no more additional benefit than that obtained with four applications.

Arnold[18] concluded that the topical application of fluorides for caries control in children has adequate experimental evidence to support its use and recommended the judicious use of sodium fluoride solution. It has been recommended that topical fluoride application should continue to be administered in communities which undertake water fluoridation until such time as the water fluoride approaches its full effectiveness[19].

Several groups of investigators have studied the application of fluorides other than sodium or potassium fluoride as a caries control procedure when used topically. Klinkenberg and Bibby[20] reported 38.5 per cent less new carious surfaces approximately 14 months after four applications (monthly intervals) of 0.06 per cent lead fluoride to the teeth of students aged 18 to 40 years. Galagen and Knutson[17] reported that treatment with lead fluoride (0.06 per cent) was without effect in reducing the incidence of dental caries in children 7 to 15 years of age.

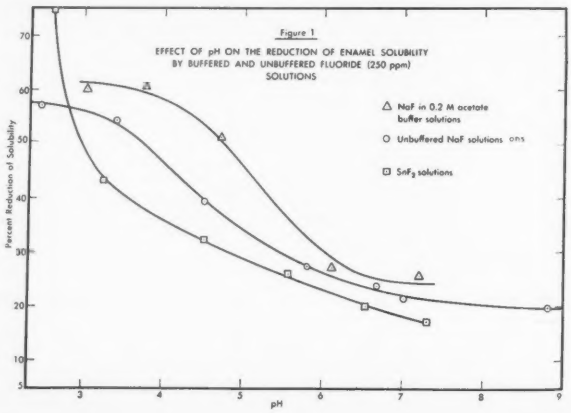
Howell et al.[21] compared the effectiveness of a 2 per cent aqueous unbuffered solution of stannous fluoride with 2 per cent sodium fluoride. A control group of children who received no treatment was included. At the end of one year, an approximately 55 per cent reduction in new decayed teeth was reported for both the sodium and stannous fluoride. At the end of two years, 60 per cent to 83 per cent, depending on the method of application of the stannous fluoride, and 24 per cent reductions in DMF teeth were reported for stannous fluoride and sodium fluoride, respectively[22].

Howell and Muhler[23] compared the effectiveness of stannous chlorofluoride (4 per cent) with sodium fluoride (1 per cent) in reducing tooth decay in children when applied topically and reported a reduction of 86.9 per cent in carious teeth for the stannous chlorofluoride group compared with the sodium fluoride group.

Conflicting reports have been published with respect to the effect of the pH of the fluoride solution as well as the nature of the fluoride in reducing enamel solubility in acid. Bibby[24] observed that fluoride solutions reduced enamel solubility when the pH was lowered. Phillips and Muhler[25] and Palmer et al.[26] reported similar results.

Muhler and Van Huysen[27] observed that buffered solutions of sodium fluoride are more effective than unbuffered solutions in reducing enamel solubility and that the optimum pH for a 2 per cent sodium fluoride solution is 4.5. Muhler, Boyd, and Van Huy-

Figure 1
EFFECT OF pH ON THE REDUCTION OF ENAMEL SOLUBILITY BY BUFFERED AND UNBUFFERED FLUORIDE (250 ppm) SOLUTIONS



*From proceedings of the Scientific Section of the Toilet Goods Association, Inc., 28:14 (1957).

DEVANEY PHOTO

sen[28], using calcium and phosphorus determinations to evaluate reductions in enamel solubility, concluded that stannous fluoride protected enamel better than sodium fluoride. Muhler and Day[29] reported that neither sodium fluoride nor stannous fluoride was more effective at a low pH than at a high pH (pH range 2.5 to 7.0) regardless of concentrations.

Recognizing the conflicting reports in the literature, Walsh et al.[30] determined the effects on the solubility of powdered enamel of treatment with sodium fluoride or stannous fluoride solutions at various pH levels, using a "repeated decalcifications" procedure. The authors concluded that the protection afforded enamel by sodium fluoride and stannous fluoride is a function of the pH at which the fluoride is applied, with the greatest effectiveness appearing at low pH levels and with stannous fluoride solutions. In this work, the phosphorus content of the fluoride (treatment) solution after contact with the enamel for twenty minutes was used, in part, to measure the effectiveness of the fluoride in reducing "decalcification." The "protected" enamel which was separated from the fluoride treatment solution by centrifugation was shaken for twenty minutes with the decalcifying solution (0.2 normal acetic acid solution adjusted to pH 4.0). The supernatant "decalcifying" liquid was analyzed for phosphorus after the twenty minutes of contact with enamel and the decalcification procedure, using the same protected enamel, repeated two additional times. The amounts of phosphorus dissolved during the fluoride treatment and the three successive decalcifications were taken as a measure of the effectiveness of the fluoride treatment. Since basic tin salts as well as the products of the reaction between the fluoride and enamel were in contact with the enamel during the decalcification steps, the validity of the Walsh et al. conclusions is open to question.

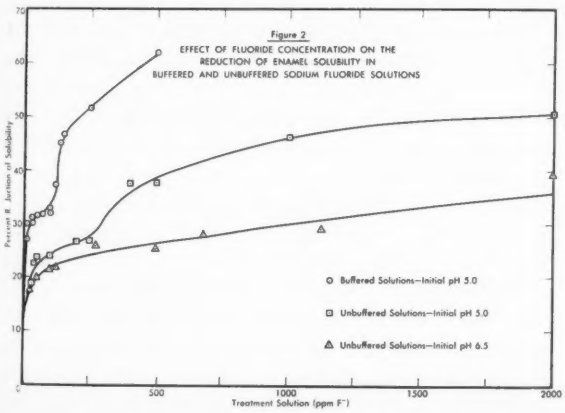


Figure 2
EFFECT OF FLUORIDE CONCENTRATION ON THE REDUCTION OF ENAMEL SOLUBILITY IN BUFFERED AND UNBUFFERED SODIUM FLUORIDE SOLUTIONS
Percent R. Jection of Solubility
Buffered Solutions—Initial pH 5.0
Unbuffered Solutions—Initial pH 5.0
Unbuffered Solutions—Initial pH 6.5
500
1000
1500
2000
Treatment Solution (ppm F⁻)

In a view of the foregoing, it was of interest to develop a method wherein reagent precipitates or reaction products are removed prior to decalcification and using this method to determine the comparative effectiveness of sodium and stannous fluoride solutions in reducing enamel solubility in acid. The results of this study are presented in this report.

Enamel Solubility Test

Tooth enamel consists principally of hydroxyapatite[31]. Under suitable conditions, the surface enamel

(*Continued on page 251*)

The Perfumer

By J. R. ELLIOTT

The aura of mystery, secrecy and glamor surrounding the perfumer has created many misconceptions of the man and his work. The most recurrent of these are that he is an exceptionally fortunate individual who inherits his talent from a long line of perfumers, and that he possesses a large, well-guarded "black book" of formulas representing the concentrated wisdom of his forbears, which gives him a very special advantage over the ordinary man seeking a place in perfumery. These misconceptions or myths, which have too often discouraged prospective students of perfumery, are not based upon facts.

Occasionally a perfumer does come from a family of perfumers, a situation more common in Europe where it is quite customary for the son to follow the profession of his father. This is advantageous in so far as the prospective perfumer can start his training at an early age. Nevertheless, the perfumer's talent can be acquired only by effort and experience —not by inheritance. The son of a perfumer must work to earn his skill as did his father before him.

The "black book" is the most persistent of the myths. The mere possession of a book of formulas accumulated or inherited, does not and cannot qualify a man as a perfumer; in fact, a book of formulas is practically worthless by itself. Fragrance formulas are, like high fashion, constantly being re-styled and re-furbished in an effort to make them sell better. An initial formula may require as many as fifty adjustments by the perfumer before it will finally win customer acceptance. Paradoxically, this same formula may be unacceptable to another customer, and again require a new series of adjustments before acceptance can be obtained. What really matters is not how many formulas a man has tucked away in a black book, but rather how effectively he can manipulate them.

The four basic requirements for a man to become a perfumer are patience, an active imagination, an odor memory, and a modest chemical background.

Patience is the indispensable qualification of the man who aspires to become a successful perfumer. The perfumer develops his skill through continuous, often discouragingly hard work. Even when he has become proficient he is constantly faced with difficult situations which require much tedious effort to solve them. If he is to gain distinction in his field, the perfumer must be something of a perfectionist. In these circumstances the virtue of patience can hardly be overestimated.

Imagination is creative mental power, the ability of the mind to form mental pictures involving the sensory perceptions. Why some persons possess an extraordinary amount of creative power is a much discussed but still unsettled point among psychologists. The existence of this quality in an individual is constantly reflected in all phases of his life by a driving search for new ideas and activities.

Every accomplished perfumer possesses a highly developed imagination, for imagination is the essence, the heart of perfumery. Fragrances are created in the imagination long before they are executed in the laboratory. If an individual aspires to become a perfumer but lacks imagination, he is only wasting his time.

The ability too examine an odor, file it away in the memory, and then recall it at will is the very foundation of the perfumer's skill. This is an ability which is laboriously acquired rather than one which is inherent in the individual. Smell is the least used of the five senses. Consequently, that portion of the mind concerned with its memory must be strengthened by experiences, a process which takes time, practice and concentration. Fortunately, the person who cannot develop a reasonable odor memory is a rarity.

The complexity of the application of modern fragrances in such diverse products as cosmetics, lipsticks, powders, lotions and industrial re-odorants makes it increasingly desirable that the perfumer have some knowledge of the chemistry relative to the technical aspects of a fragrance.

Discoloration of a fragrance oil in soap, deterioration of a fragrance in a powder base, odor change due to polymerization, fragrance performance in either alkaline or acidic media, and stabilization of aldehydes, are a few of the situations encountered in perfumery that require some understanding of chemistry. The newest entry in the fragrance field, industrial re-odorants, is demanding an increased knowledge of chemical engineering and physical chemistry for its large scale application.

The basic training of the sense of smell is the first educational step to be undertaken by the student perfumer. This procedure requires an understanding of five points:

(1) The physiology of smell
(1) The mechanical technique of smelling.
(3) Odor fatigue, its recognition and avoidance.
(4) The artistic placement of single odors in the perfume category.
(5) The recognition of the usefulness of unpleasant odors.

The sensitivity of the sense of smell is amazing. Quantitatively, it can detect certain substances in concentrations of only millionths of a gram per liter of air. Qualitatively, it can readily differentiate between such closely related (atructurally) chemical bodies as cyclohexanol and cyclohexanone, which differ in composition by only two hydrogens.

The olfactory surface is known to be a mucous area about an inch square located in the upper passage of the nose approximately at the bridge. This active surface, technically described as the olfactory epithelium, consists of cells covered with microscopic

(*Continued on page 244*)

Prize-winning manuscript in the Central Region, 1957 Lunsford Richardson Pharmacy Awards competition

The Hydrophile-Lipophile Balance of Gums* PART ONE

BY A. H. C. CHUN, R. S. JOSLIN and A. N. MARTIN

In recent years numerous synthetic surface active agents have been developed until the number of surfactants available now exceeds one thousand. To choose from this list the best agent or combination of agents for any given application would be difficult, time consuming, and impractical unless some system of rapidly reducing the number of possibilities were available. This need was partially fulfilled by Griffin (1, 2), who in 1948 first advanced a systematic classification of surfactants based on the principle of hydrophile-lipophile balance[2]. This method of classification is known as the HLB System.

The HLB System. The molecule of a surface active agent consists of two portions, a lipophilic or nonpolar group and a hydrophilic or polar group. It is the relation between these two groups that is designated as hydrophile-lipophile balance. In making an emulsion of oil and water, a third component or emulsifying agent is utilized to reduce the interfacial tension between the two phases and to stabilize the emulsion by preventing coalescene of the dispersed phase. If an emulsifier is added to the mixture, it tends to migrate and cencentrate at the interface with the hydrophilic portion of the molecule oriented toward the aqueous phase and the lipophilic portion toward the oil phase. The surfactant is said to have the proper hydrophile-lipophile balance when it orients in such a way as to produce a stable product.

However, if the molecule is predominantly lipophilic the agent tends to be more soluble in the oil phase and, in the extreme case, migrates completely into the bulk of the oil. Similarly, if the hydrophilic portion of the molecule is excessively large the agent is withdrawn into the aqueous phase. In such cases a suitable balance between hydrophilic and lipophilic groups does not exist.

According to Griffin's system of classification low HLB numbers have been assigned to chemicals that are predominantly lipophilic or "oil-loving" and high values to those that are hydrophilic or "water-

*Presented to the Pharmacy Section, A.A.A.S., Indianapolis meeting, December, 1957.

Fig. 1—PHASE SEPARATION INVOLVED IN THE DETERMINATION OF HLB. The HLB values for the mineral oil-in-water emulsions from left to right in the figure are 12.3, 11.4, 10.5, 9.6 and 8.7. The center sample, showing the least separation, represents the "required HLB" of 10.5.

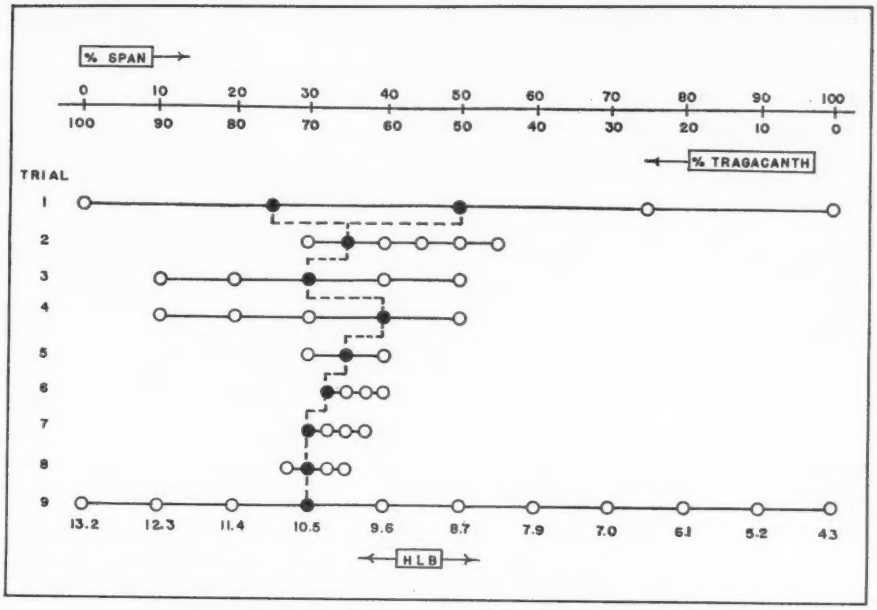


Fig. 2—FLOW DIAGRAM FOR THE METHOD INVOLVED IN THE DETERMINATION OF HLB.

loving". Depending on the strengths of the lipophilic and the hydrophilic groups of the surface active agents, various activities such as antifoaming, wetting, detergency, and o/w and w/o emulsification can be effected over the HLB range. Emulsifiers with HLB values of about 3 to 8 promote w/o emulsions, and those with values of 8 to 16 favor the production of o/w emulsions.

In the HLB system oils, waxes, fatty acids, and other emulsifiable substances have been assigned "required HLB" values. For example, Liquid Petrolatum, USP[3], has a required HLB of 10.5 for the production of an o/w emulsion and 4.3 for a w/o emulsion. A mixture of emulsifiers is blended to match these required HLB values in order to obtain a stable emulsion of the type desired. The HLB values of some emulsifiers and the required HLB values for various emulsifiable substances have been reported by Griffin(3).

Chemical type. The chemical type (e.g. soap, sulfated alcohol, or ester, with a saturated or unsaturated hydrocarbon portion) and the electrical charge (e.g. anionic, cationic, or nonionic) influence the effectiveness of an emulsifier. Hence, once the required HLB for a particular emulsion is known, various emulsifiers of different chemical types must be tested to determine which ones are the most efficient and hence produce the most stable emulsions. After the optimum HLB and chemical type have been established the total amount of emulsifier to produce the desired emulsion is determined.

Legend:

● Emulsions prepared corresponding to the various ratios of Span to tragacanth.

● Best emulsion in each trial.

●—● Emulsions of equal quality.

Mixed emulsifying agents. In recent years emulsifier combinations consisting of two primary agents of different hydrophile-lipophile balance, or a mixture of auxiliary and primary agents, have been shown to form more stable emulsions than single o/w and w/o agents alone. Martin (4) listed the functions of the auxiliary emulsifiers, in conjunction with the primary agents, as providing the proper hydrophile-lipophile balance, forming a stable film at the interface, and providing the desired consistency to the finished product. Schulman and Cockbain (5) concluded that emulsions are stabilized by the formation of intermolecular complexes between emulsifiers at the interface, where one of the agents is soluble in the oil and the other is soluble in the water. They believed that these complexes reduced the interfacial tension to a greater extent than did each agent alone.

The HLB of natural and semi-synthetic emulsifiers. Many of the synthetic surfactants have been classified by the HLB system (3), but no attempts have been made to determine the HLB of natural emulsifiers[4] such as acacia and gelatin, and the semi-synthetic agents such as methylcellulose. These natural protective colloids have certain desirable properties that are lacking in the synthetic surfactants, such as demulcent and emollient action, ability to increase viscosity, film-forming properties, compatibility with a wide variety of materials, and non-toxicity (6). A knowledge of the HLB values of natural agents would facilitate their use as emulsifiers, but more important, would perhaps assist in the elucidation of the mechanism of action of hitherto unexplained but commonly accepted emulsification

(*Continued on page 258*)

Polyethylene Oxide Gums

Polyethylene glycol and its derivatives have found widespread applications in the toilet goods industry. The polyethylene glycols with average molecular weights ranging from about 200 to 20,000 have been commercially available for some time. Those with molecular weights to 700 are liquids, while the higher polymers are waxlike solids[3]. All of these materials have high solubility in water. The liquids are commonly employed in cosmetic and pharmaceutical preparations as humectants and coupling agents for water-insoluble organic compounds. The higher polymers serve as water-soluble waxes. They are frequently used in cosmetic and pharmaceutical ointments and lotions. These polyethylene glycols are also available as the ethers of the lower alcohols, as well as derivatives of the higher molecular weight alcohols, acids, amines and alkylphenols. The usefulness of these materials as emulsifying agents, solubilizers and conditioning agents is well known[4].

Recently, it has been found that with the aid of special catalyst systems it is possible to prepare polyethylene oxide polymers of extremely high molecular weight[2]. At these higher molecular weights the material takes on a resinous rather than a waxy character. Commercial materials have now become available ranging in molecular weight from about 100,000 to about 4 million. These materials, unlike the lower molecular weight products, increase the viscosity of water at very low concentrations.

Properties

The polyethylene oxide gums are soluble in water, partially chlorinated hydrocarbons, and the lower alcohols containing about 10 per cent of water. They are insoluble in anhydrous alcohols, aliphatic hydrocarbons, fluorinated hydrocarbons and most polyols. A list of solvents and non-solvents is contained in Table I. These gums can tolerate large amounts of electrolyte without precipitation. The effect of 10 per cent solutions of a number of inorganic salts on the viscosity of a 2 per cent high molecular weight polyethylene oxide solution in water is shown in Table II.

These gums thicken aqueous and organic solvents in which they are soluble. In many instances, solutions of these polyethylene oxides in organic solvents can tolerate as much as 80 per cent of a non-solvent

*From proceedings of the Scientific Section of the Toilet Goods Association, Inc., 28:9 (1957).

TABLE I

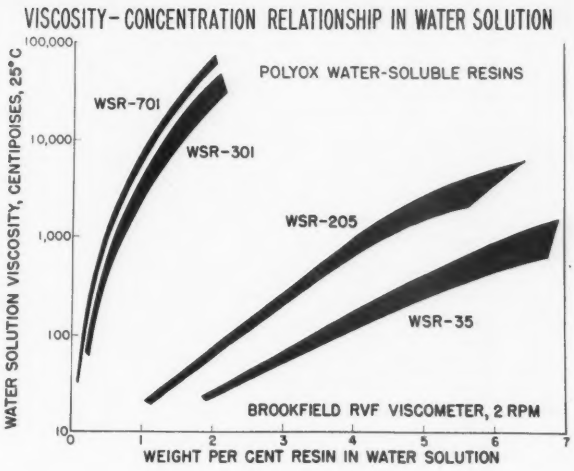
Solubility Data

Soluble Cold	Insoluble Cold, Soluble Hot	Insoluble
Acetic Acid	Aromatic Hydrocarbons	Acetone
Acetonitrile	Carbitol Solvent	Aliphatic Hydrocarbons
Chloroform	Carbon Tetrachloride	Diisopropyl Ether
Ethylene Dichloride	Cellosolve Solvent	Ethyl Acetate
Isopropanol (91%)	Dioxane	Freon 11, 12, 111, 113
Methylene Dichloride	Ethylene Carbonate	Glycerine
Water	Methanol (Anhyd.)	Methyl Isobutyl Ketone

TABLE II

Effect of Salt Concentrations on Viscosity of 2% Polyethylene Oxide Gum Solutions in Water

Salt Used	Heppler Viscosity, Cps.
No Salt Added	50.96
10% Salt, based on solution weight, as follows:	
Aluminum Sulfate	20.06
Barium Nitrate	33.45
Barium Chloride	34.98
Ferric Chloride	21.61
Ferrous Sulfate	4.01
Lead Acetate	43.46
Magnesium Chloride	47.25
Silver Nitrate	39.21
Stannous Chloride	8.52
Zirconium Sulfate	23.78



without precipitation. Thus, a very large variety of thickened organic solutions can be prepared. Viscosity-concentration curves for several commercial grades of polyethylene oxide gums in water are shown in Chart I. All of these gums show a reduction in viscosity with increased shear rate. This effect

in Toilet Goods*

BY LLOYD OSIPOW, FOSTER D. SNELL, INC.
AND LESTER D. BERGER, JR.
UNION CARBIDE CHEMICALS COMPANY,
DIVISION OF UNION CARBIDE CORPORATION.

is more pronounced the higher the molecular weight grade of the resin.

Films of these gums can be prepared by casting from solution or by milling. These films are tough, flexible and resistant to oils and greases. The cast films do not adhere to most common surfaces. Where good adhesion is desired, they may be blended with minor amounts of dimethyl hydantoinformaldehyde resin. The films are essentially non-hygroscopic. This is to be expected, since the hygroscopicity of the polyethylene oxide series decreases with increasing molecular weight[3]. Characteristic mechanical properties of a milled film are shown in Table III.

TABLE III

Mechanical Properties

Tensile strength, psi	1,800 - 2,400
Yield strength, psi	1,300 - 1,500
Ultimate elongation per cent	1,100 - 2,000
Stiffness (Tensile modulus), psi at 25° C.	35,000 - 40,000
Shore hardness "A" Scale	99
Izod impact	Sample bent, did not break

Suitable plasticizers for these gums include organic esters such as the glyceryl acetates, citrate esters and

(*Continued on page 260*)

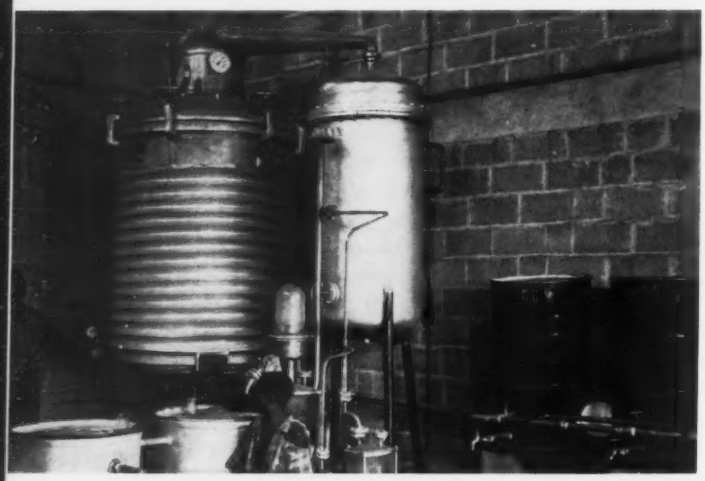
Other Vetiver Oils

BY STEFFEN ARCTANDER

PERFUMERY RESEARCH & DEVELOPMENT DEPARTMENT, COLGATE-PALMOLIVE CO., JERSEY CITY, N. J.

As was earlier pointed out, Vetiver oil has been known for many centuries, if not for thousands of years. The grass seems to originate in India and Indonesia, the latter still producing a few tons of this oil yearly. India, however, with its increasing soap industry, and with its world-famous research institute of agriculture in Dehra Dun, becomes increasingly self-supplying with essential oils, and among them, with vetiver oil.

When the centre of production of vetiver oil moved westwards, it took quite some time for the European settlers in the new colonies to adapt themselves to the production of this oil. The distillation requires a solid amount of experience and "know-how". Soil conditions, especially fertilizing, steam pressure and length of distillation, age of the root material etc. etc., were all factors of importance for the yield and quality of vetiver oil. But Reunion Island ("Bourbon"), although unkown and uninhabited until about 400 years ago, enjoyed very soon the appearance of



The 12-atmosphere-pressure still for Vetiver oil at PARKIVU in GOMA, Eastern Belgian Congo. From the condenser, the oil/water mixture passes a florentine flask, 2 separators, and the water returns.

many spices and perfume plants, and among them: Vetiver from India. The settlers in Reunion became familiar with the problems around the production of vetiver oil, long before the grass was exploited for this purpose elsewhere outside its countries of origin.

But the vetiver grass moved steadily westward, and soon after its arrival in Reunion, it was introduced in the French West Indian possessions, particularly in Haiti. Although it seems to be difficult to trace back exactly when the grass arrived in Haiti, there is no doubt, that it has been there for centuries. During the 17th century, when explorers and merchantmen roamed the seven seas, there was a lively traffic with foreign plants, seeds, trees etc., which the new settlers wanted to cultivate or exploit somehow.

The vetiver plant was probably not brought to the West Indies as a perfume plant, but more likely as a soil protective plant. The fine, lacelike network of rootlets acts as a binder for the loose, laterite or volcanic soil, which is easily flushed off the surface by the torrential, tropical rains. It is most likely, however, that the introduction of vetiver grass in Belgian Congo, Angola, Brazil, even in Spain, was carried out for the purpose of distilling vetiver oil from the rootlets.

As a native of India, the vetiver grass grows wild or semi-wild all over the Indian lowlands to a maximum altitude of 4000 feet. Likewise in Burma, Ceylon, the Seychelle islands, Malaya, Fiji islands, etc. It is estimated, that between 3000 and 5000 tons of vetiver roots are harvested every year in India. About half of this is consumed in the production of "tattis", the aromatic mats, curtains or rugs,—the other half is distilled, yielding from 15 to 25 tons of vetiver oil. This is not even enough for the domestic use in this huge country, but some Indian vetiver oil occasionally reaches Europe. This oil is generally of an excellent quality, although adulteration with cedarwood oil and Terpineol (both produced in India) occurs. One of the characteristics of Indian vetiver oil is its color, which is often green or brownish-green. Although copper stills are most common in use, the green color probably derives from a content of azulenes in the oil. Another peculiarity of the Indian vetiver oils is their optical rotation. Oils from the northern and northeastern India, where the

Monsieur Etienne Legast in front of this office entrance.

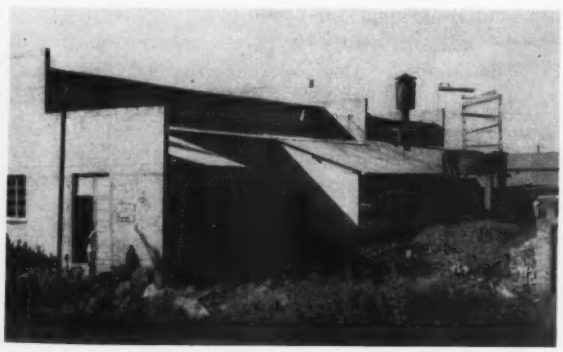
grass grows only wild, are strongly laevo-rotatory. In Southern India the grass is cultivated, and the oil from this grass is dextro-rotatory. I wish to add, that I am not in a position to state, that vetiver oil distilled from wild-growing plants necessarily must be laevo-rotatory, but it just happens to be the case in India at least. Another fact is, that the Indian vetiver oils from wild-growing plants (rootlets) are quite different in yields and physico-chemical properties, compared to other vetiver oils. The oil from cultivated, South-Indian roots, resembles the old, well-known Java-type of vetiver oil.

India produces a large number of other essential oils, and the shortage of vetiver oil has encouraged the production of several other oils of a similar "root" type. The cypress oils from various cypress species have reached far beyond the boundaries of India, and one of the isolates, cypriol, has found interest at several European houses. Its price is very attractive, compared to the effect of this isolate.

It is generally believed, that the method of dis-

Grinding the Vetiver root. Parkivu.

tillation of vetiver root, plays a major role for the quality of the oil produced. Certain factors of paramount importance have already been pointed out. The roots should be crushed or coarsely ground and soaked in water for at least a couple of hours before distillation. During distillation, the contents of the still should be stirred thoroughly, and as a special tip, the addition of salt (sodium chloride) at the rate of 5 to 50 per cent of the weight of the plant material,



PARKIVU distillation plant's outdoor condenser, generator unit.

is performed in Reunion. To my knowledge, this trick is not common in use anywhere else. But this does not mean, that the addition of salt alone makes the difference between Bourbon vetiver oil—and all the other vetiver oils.

In India, the distillations are usually carried out in copper stills, and the fact, that Indian vetiver root is extremely "sour" (high acidity in the rootlets) at the moment of harvesting can have some influence upon the copper plates, so that the oil turns greenish. The roots themselves are, when freshly harvested, green-brown, and should be aged shortly until they are brown. But this is not always done in India. If copper stills were used generally in Reunion, where sodium chloride is added, I would assume, that we would also have a green oil there. The oil from fresh roots comes in greater yield, but is usually of a lower quality than oils from slightly aged roots. Over-aging and drying-out of the roots, however, results in a considerable loss of essential oil yield.

In India, the wild-growing, northeastern variety of vetiver has been experimentally introduced into the southern districts, and with promising results. The wild grass has a pronounced ability to produce a self-sown crop from its abundant seed, thereby saving the planters a lot of troublesome work with replanting after harvesting. In Reunion, the planters have cultivated their vetiver grass for centuries, and they produce a uniform oil of supreme quality from their hundreds of stills. Small lots are bulked; bulked lots are controlled before being exported. Planters and distillers have life-long experience in growing and distilling.

A newly cleaned Vetiver root is inspected for foreign materials.

In the Belgian Congo, the problems were different. Even the quality of the soil was completely unknown to the settlers of our century. Here, it is exclusively Belgians, who cultivate the perfume plants. In certain cases, it is the missionary stations. All of them are people with great interest and enthusiasm, but without the inherited know-how, which is only obtained through generations of experience, and through knowledge of the small details, which are often so decisive for a favorable harvest. In regard to distillation, the Belgian Congo posesses a modern

distillation plant as beautiful as can be. One could even say, that this distillation plant has but one fault: the vetiver oil produced there is almost similar to an oil distilled in Europe from the same root material, and this oil is, beyond discussion, different from Reunion oil. Vetiver oil from Belgian Congo has other and weighty advantages.

The entire production of Belgian Congo vetiver oil is distilled in one highly modern distillation plant, where a competent and experienced chemical engineer has at his disposal well-equipped laboratories. He buys the vetiver root from Belgian farmers and missionary stations. The roots arrive clean at his factory, and are subsequently coarsely-ground in a grinding mill, soaked in water overnight, and distilled with steam at about 12 atmospheres pressure. The distillation is ended after approximately 18 hours, sometimes less. The yield of oil is about 2.4 per cent of the weight of the root material. Alfons M. Burger, the earlier mentioned Angola-settler, has reported up to 2.7 per cent in his still. The age of the roots is of absolute importance. Roots of less than 2 years of age give a small yield of a thin oil, and roots of more than 2 years of age will give a small yield of an oil which is dark and viscous. The high-pressure boiler can increase the yield significantly. That is, they distill the heavy and viscous sesquiterpenes.

In a summary, the Belgian Congo vetiver oil is a very good vetiver oil, and its quality is comparable to or superior to the average commercial quality of vetiver oil. Its quality is strictly uniform, thanks to this sole distillery. It is only distilled in very modest quantities. The production for 1957 is estimated at less than one ton, a figure which could easily be increased, as vetiver grass is abundant in these regions.

Etienne Legast, a young Belgian chemist and perfumer, established himself in the Belgian Congo during 1952. Within a surprisingly short time, he built himself a beautiful factory for distillation of essential oils and for the manufacturing of perfumes for soaps and cosmetics etc. The perfumes of Kivu, or Parkivu as the factory is called, has grown rapidly and steadily, and with the enthusiasm which we find only among the settlers, Legast has here created an industry in a way, which most other people can only dream about. Literally with his own hands, Legast constructed a distillation room, a boiler room, a bottling room for finished products, several laboratories, offices, etc. The boiler itself and the large stills were shipped from European factories and were constructed according to the designs of Mr. Legast.

Goma, as this beautiful city at the northern tip of lake Kivu is called, is beyond doubt one of the most beautiful sights in Central Africa. If any drawback should be mentioned in relation to this picturesque city, one could say that it is situated very inconveniently for supply and heavy transport. It took almost a year to ship the heavy equipment from

Vetiver root arrives at the Goma distillery from faraway farms.

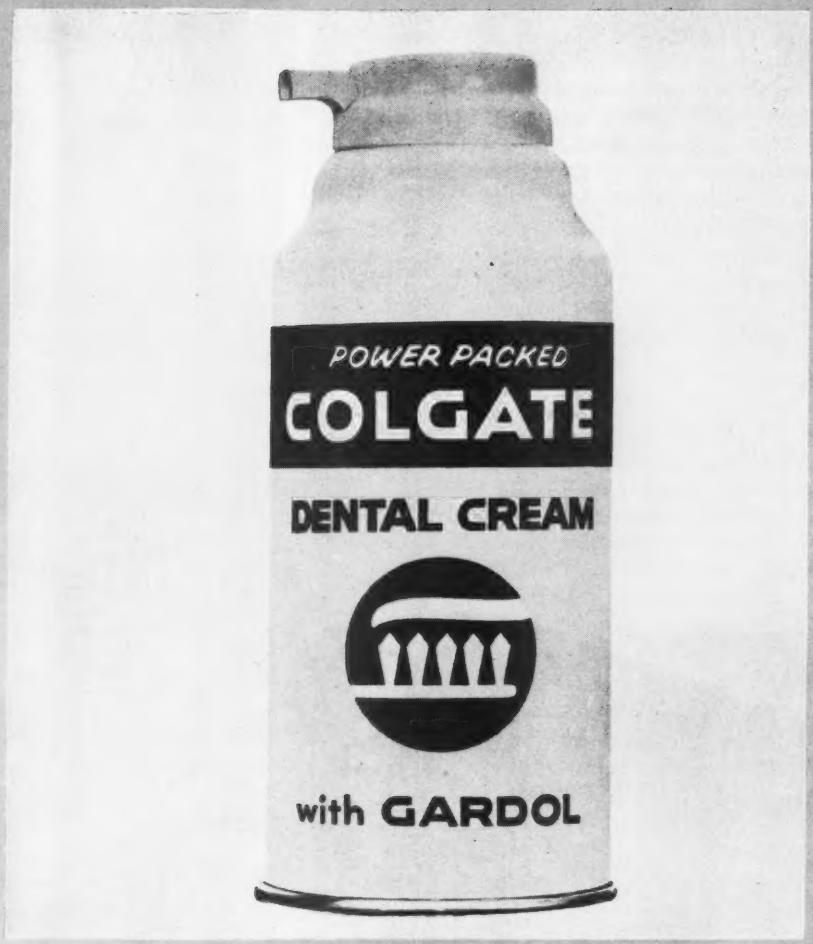
Europe to Parkivu in Goma. Apart from vetiver oil, Legast rectifies eucalyptus oil from eucalyptus smithii, the crude oil of which he receives from settlers in the region of Mokoto, northwest of Goma.

The distillation vat for vetiver receives its steam from a boiler yielding 12 atmospheres pressure. The fuel material is equally surprising: shells (husks) from coffee beans are blown into the fire from a ventilator. The fire thus produced is enormous, and Legast's neighbor, a coffee-bean rinsing factory, thus disposes of his husks. Even gas is produced in this factory. A generator transforms motor gasoline into gas which is consumed in the laboratories for the smaller rectification stills, vacuum stills etc. The vetiver roots are purchased in lots of many tons from the settlers in the regions west of lake Kivu, especially in the Province of Ruanda, one of the densely populated lands of Watutsi's. The vetiver roots are most often of a light yellow straw color.

(*Continued on page 262*)

One of OPAC's go-downs. This one is for PYRETHRUM, which is a Chrysanthemum flower. By extraction an insecticide is produced.

Packaging and Selling



Toothpaste in an Aerosol

is being introduced by Colgate-Palmolive Company, which is marketing its Colgate Dental Cream in a seven-ounce, red and white aerosol container. The retail price is 98c. The company will continue to sell Colgate Dental Cream in tubes.

Personalized, colorful squeeze bottles made from an ALATHON® POLYETHYLENE RESIN have superior "snap-back" and impermeability

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Produced by the Bradley Container Corporation, Maynard, Massachusetts, the bottles are designed to be filled and sealed at the bottom by the packager on a high-speed line.

Bradley selected ALATHON 20 for this application because of its quick "snap-back" between squeezes and its outstanding resistance to environmental stress cracking. Highly impermeable, ALATHON protects the most delicate liquids, creams and powders for long periods... cannot harm contents.

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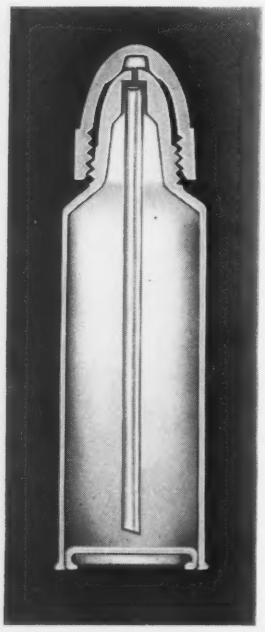

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BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

The Ipana Plus BRAINSTORM

BY M. L. RITTENHOUSE, as told to JOSEPH KALISH, TECHNICAL EDITOR, DRUG & COSMETIC INDUSTRY

M. L. RITTENHOUSE

Maintaining a creative climate in an organization is a 'must' if you want to get the mileage out of your people that lies potentially within them," says J. J. Clarey, Jr., vice president of Bristol-Myers Products Division in charge of product planning. "Whether it be at formal Brainstorm sessions or at informal 'buzz' sessions among our technical staff, the occasional no-holds-barred rule can help step up the flow of new ideas."

Both techniques are used to stimulate a large number of ideas on any given subject. They are based on the assumption that if enough ideas are presented, some are bound to be good.

In Brainstorming and in buzz sessions, there are some general rules. The first is that criticism is withheld—no guffaws, no snickers. All ideas are welcomed, the wilder the better, because the greater the number of ideas the more likelihood of winners.

Brainstorming is a much used technique at Bristol-Myers. Sessions have been held on a wide range of topics from, "How can we improve the Annual Report?" to new ideas on consumer promotions.

While Ipana Plus did not come out of a formal brainstorming session, it was the more the result of a "no-holds-barred" buzz session. When I first came with Bristol-Myers in April, 1956, I went to the weekly research and development meetings. These meetings were chaired by Mr. Clarey who, on occasion, will turn the metting into a "free-wheeling" discussion similar to the buzz sessions. This he did at that first meeting. Mr. Clarey announced that he wanted a new dentifrice. He said he wanted a new product with some distinctive quality, either in the product itself or in its mode of production. "To start the ball rolling" he said, "Perhaps something that would lend itself to unique production, as in cigarette manufacturing where the cigarettes are produced as one continuous stream of paper and tobacco until cut into three inch pieces."

At that meeting a few ideas were "tossed into the air to see if they would stick." Among them were such suggestions as a chocolate-covered toothpaste for children, a dental floss with active ingredients, etc.

Then instead of throwing a cut-off switch, Mr. Cleary said he wanted us to continue to dwell on the problem. He emphasized the fact that he would listen to all suggestions—even those that on the surface sounded wild. The search for the new dentifrice was to be a Blue Sky project; this Blue Sky thinking is an intrinsic part of Brainstorming and buzz sessions.

At that point I began a most fascinating game. Everything I saw, everything I looked at, everything that came into my hands, everything I put into my mouth, I questioned: "Could this be a dentifrice? If "yes" what are its advantages? What about the disadvantages?"

Actually, everytime I went into the supermarket, I would walk up and down the aisles examining the varied and sundry spice containers, jarred and packaged foods, studying the weird and wonderful array of gadgets, always wondering, "Could a dentifrice go into this package? That package? At night, reading the newspapers or magazines, I would approach each advertisement, each picture, like a thwarted hunter

The Snap-Cap . . . offers your users unmatched convenience. The cap "POPS" open . . ."SNAPS" shut tightly . . . no matter how often the container is used.

"Push-Up" Convenience . . . Push-up Bottom provides the convenience looked for by more and more users of stick-type products.

Colorful Lithographed Decoration . . . up to 4 colors . . . colors are bright and permanent . . . line art is crisp . . . lettering is clean and sharp.

New . . . Plastic Stick Containers with SNAP-CAPS

. . . Push-Up Bottoms . . . and bright lithographed decorations

Three basic advantages make this a sales-package that really works at point-of-sale! Its Snap-Cap . . . Push-up Bottom . . . and printed-label advantages give your product the extra convenience and eye-catching appearance it must have! Ask your Owens-Illinois representative to show you samples of the new Plastic Stick Containers. They're available in a wide variety of colors, in 2-ounce liquid capacity. Call your O-I representative, today! Why not now?

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on the last day of the season.

Three or four weeks had passed, and I was still trying to get even deeper into the problem by reading the innumerable research studies and reports that had been written on Ipana. Among the archives was one written by Henry Bristol in 1911. He traced the trends of the dentifrice market, pointing out that originally dentifrices were in a liquid form, then powder and in 1911 the paste type dentifrice was dominant.

Another extremely interesting piece of information came to light at a research meeting about the end of May when Bob Warfield, then director of the screening division, reported a study he had done concerning the viscosities and yield values of several dentifrices. In the course of his discussion, he mentioned that Ipana had a low yield value, and therefore flowed easily.

About two or three weeks later I stopped for lunch in one of the counter-service restaurants in the concourse of the RCA Building. While waiting for my sandwich and coffee, I played that game of "making dentifrices." I studied a chipped bowl, a cream pitcher, then mentally made a toothpaste container by reducing the giant coffee urn to four inches. I watched the man next to me squeeze mustard from a polyethylene container onto a burnt hamburger.

Then it happened—an association of ideas, "Mustard has a low yield value. Ipana has a low yield value. Maybe we could put Ipana into a polyethylene container." Here was a possibility—a squeeze bottle dentifrice.

Some of the obvious advantages included the fact that it would be less messy, eliminating those distorted tubes. (Our consumer studies showed that "messiness" was a big negative for tubes.) Also it would stay put in the medicine cabinet and not fly out, just missing the eye, each time the cabinet door was opened. Etc. Etc. Etc.

That afternoon an opportunity arose wherein I was able to mention the "squeeze-bottle" idea to Mr. Clarey who listened and said, "Get a couple of polyethylene bottles and tell the boys in the Lab to put Ipana in them."

This done, a few of us took Ipana home in containers labelled "mustard", "ketchup", some were tall, round bottles, others were short, squat bottles. All of them were tried.

After this short period of pre-pretesting, on July 26, 1956, Mr. Clarey asked the management committee if they had any interest in a lotion dentifrice in a squeeze bottle container? The Committee enthusiastically bought the idea and the wheels were set in motion. Almost exactly one year later Ipana Plus was unveiled to the sales-division managers.

The 12 months intervening furnished numerous examples of team play and exciting individual work in which almost everyone in the Bristol-Myers Products Division participated.

The development laboratory worked on countless formulas which had to be screened and tested under many varied conditions. A great deal of creative thinking went into the development of the formula and into the package to find the best combination of features needed.

Packages with accordian sides were considered. Mock-ups were made of polygonal containers. Experiments were conducted with innumerable materials. All factors were tested.

Incidentally, prior to Ipana Plus, polyethylene containers had not been used for formulations with either perfumed or flavored ingredients because these materials permeate polyethylene rather easily. To overcome this deficiency, we looked at ways and means to increase the barrier properties of polyethylene. After many attempts, Plax Corporation developed an impervious lining material that is applied by a special process to the internal surfaces of the polyethylene containers. The particular lining in the Ipana Plus bottle was tailor-made to inhibit the permeation of the distinctive Ipana flavor which, incidentally, is highly preferred in the tests of consumer acceptance that are conducted regularly. The development of the "Ipana lining" solved the problem of flavor permeation and made the use of polyethylene containers a reality for perfumed and flavored products.

The unusual placement of the spout at the lower angle was done for a definite reason. We want the paste to be readily available to the consumer as soon as he removes the cap from the container.

(*Continued on page 264*)

GENUINE GOLD... the classic symbol of elegance and refined taste... can be applied like any ceramic label or decoration... at a cost only slightly higher than common color. Screen printed on glass or ceramic surfaces, permanently fired to resist abrasion and corrosion, Hanovia 22 Karat liquid gold adds [illegible] vital "extra" to [illegible]

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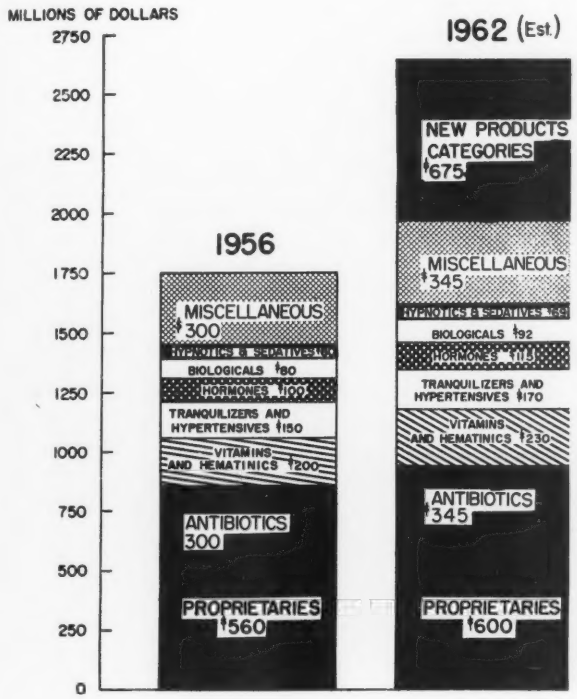
Determining the Market for NEW Pharmaceuticals*

BY CARL SETTERSTROM, SPECIAL PROJECTS MANAGER, COMMERCIAL DEVELOPMENT DIVISION, CHAS. PFIZER & CO.



New pharmaceuticals frequently are fast growing and quickly obsolete—with major and sudden impact upon total sales and profits. Chart I shows my estimate of the industry's sales pattern in 1962. Note that new categories of products are expected to account for 25 per cent of the total. In addition, there will be many new products within the fiercely competitive older categories.

The pace and importance of new product development demands the highest level of management skill. The decision making is so complex that it often requires the total time and effort of the company's chief executive and his top associates. Part of the complexity is in assessing the inherent variations of biologic response compounded by the vagaries of the patient. A further complication is the physiological change which sometimes occurs in living organisms on repeated treatment. An initially effective drug can become relatively ineffective, an initially safe drug can develop undersirable side effects.

The new product decision-maker is torn between:

1. Conflicting clinical data and interpretive opinions.
2. The need for ling-time studies on drug safety and the importance of making an effective new drug available as quickly as possible to avoid unnecessary suffering.
3. The importance of being first with a major new drug and the importance of waiting for research to develop a more effective or less hazardous related compound.
4. The importance of sustained and uninterrupted research directed toward major objectives, and the need for all-out crash programs to exploit a major research breakthrough.
5. The possibility of overloading the doctor and pharmacist with too many dosage forms, and the realization that an alert competitor can capture most of the sales with a dosage form that affords a minor and intangible advantage.
6. The possibility of a good profit, and the likelihood that costly new manufacturing facilities will be quickly obsolete.

On such complexities are superimposed the usual new product problems associated with production costs, process development, raw materials procurement, specifications, packaging, capital requirements, sales estimates, selling prices, profit estimates, selling strategy, advertising, patents, trademarks and many more.

To unravel these complexities, the executive decision-makers of our company draw upon several professions or skills to a degree not usually employed in many non-pharmaceutical companies:

1. Doctors of Medicine. The judgments of our doctors are added to those of our chemists, pharmacologists and microbiologists in our clinical, pharmacological, toxicological, chemical, biochemical and dosage formulation research, and also in our sales programs. The head of our pharmaceutical sales division, for example, is an M.D.

(*Continued on page 264*)

*Abstracted from paper before Manufacturing Chemists' Association, New York, November 26, 1957.

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In addition to emphasizing protection, "Cel-O-Seal" bands have added value in that they can be printed to highlight sales messages and other special features. Such personalized flexibility in top-of-the-bottle design gives extra impact and competitive advantages at point of sale . . . especially important in this era of changing distribution and marketing methods. Eye-catching, informative packaging enhances quality and prestige; pays off in extra sales.

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"Cel-O-Seal" cellulose bands are also sold by Armstrong Cork Co., Glass & Closure Division, Lancaster, Pa.

DU PONT
CEL-O-SEAL BANDS
REG. U. S PAT OFF.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING ... *THROUGH CHEMISTRY*

Our N-30 line of machine made, flint glass bottles is made up of 9 sizes ranging from 1/8 ounce to 8 ounces. They can be supplied plain or decorated to your specifications with fired-on ceramic labels.

CARR-LOWREY GLASS CO.

Designers and manufacturers of fine glass containers

Factory and Main Office: BALTIMORE 3, MD. • New York Office: 415 MADISON AVE. • Chicago Office: 1572 MERCHANDISE MART

Packaging and Selling

Abdicating Retailers

We were interested recently in a quote from an advertising agency executive as follows: "Supermarkets long ago ceased to sell merchandise. What's more, I do not believe this observation applies alone to supermarkets. The Willmark Service System has long maintained that U. S. retail sales clerks are just ordertakers."

Of course, the solution to this deplorable situation by this advertising executive is more and better advertising. He goes on to say, "Advertising is the only dependable sure-fire vehicle at your disposal for transmitting to the public accurate and complete information about your product."

It seems to us that there is a far deeper and more important problem to American marketing than this easy and happy solution of the advertising man. The critical problem for American distribution is whether all retailing is going to automation and is going to give up all personal selling by abdicating every single selling function. If the retailer is to abdicates all selling functions and turn these back to the manufacturer, just what will the retailer have in the near future that makes him more desirable in the field of distribution than a vending machine?

For instance, the vending machine recently introduced by the food chain Kroger in Detroit opened new possible vistas in automation and retailing. These machines installed outside this store have been netting good results not only on Sunday and during the week-day evenings, but during the day as well. Apparently quite a few shoppers have decided that if they have to do all the labor, themselves, at the retail end such as selecting and picking up the packages, paying cash and carrying them home, there is no reason on earth why they should have to stand on line at a checking out department until a clerk gives them his attention.

The several million clerks behind the retail counter in various retail stores have added an imponderable but we suspect very substantial selling force in the American market. We do not think at all that the solution to this machine age is to eliminate selling for all kinds of products at the retail counter any more than we think that selling in the retail buyer's office should be eliminated. Nor do we think that advertising can take over all the functions of demonstration, explanation and competitive comparison.

We would be more inclined to say that with the growing disbelief that is taking place for a great deal of the advertising appearing today and with the growth in lack of customer loyalty to any one particular brand, that we are due for a very substantial revival of retail independence and in retail determination to maintain their own independent integral part in distribution.

It is our opinion that if the retailers of America allow themselves to lose the entire selling function and abdicate as salesmen in favor of the manufacturer, that there will be a substantial decline in American consumption in many fields of trademarked and untrademarked products.

As a slight indication that we do not think that there is any intention by retailers to abdicate in this way their present selling function and their creative marketing ability, we would like to point to the very substantial growth of retail private label brands as reported in this column a month ago.

We would also like to suggest, as a contrary opinion to this advertising man the new policy statement for the Admiral Corporation. Marketing men remember this radio and television company as one of the very aggressive pitchmen of the industry and a very heavy national advertiser. Now the company has decided a new policy according to the following quote, "The appliance business is not like a soap business where you convince the consumer your product is good and he picks it off the dealer's shelf. We have to convince the retail salesman of the value of the product, too—and give him good selling points to pass on to the consumer."

Admiral then lists a number of selling points which will be featured in the very extensive retail trade magazine advertising in order to sell the retail salesman as well as the consumer.

Supers Lead

According to a recent Nielson report, ten drug lines are now selling in greater volume in supermarket stores than in drug stores. Unfortunately, the names of these drug items are not given. Other interesting data about drug store sales were given in this annual "Report to Retail Drug & Proprietary Stores" by the A. C. Nielson Co. of Chicago.

Who's Peeking

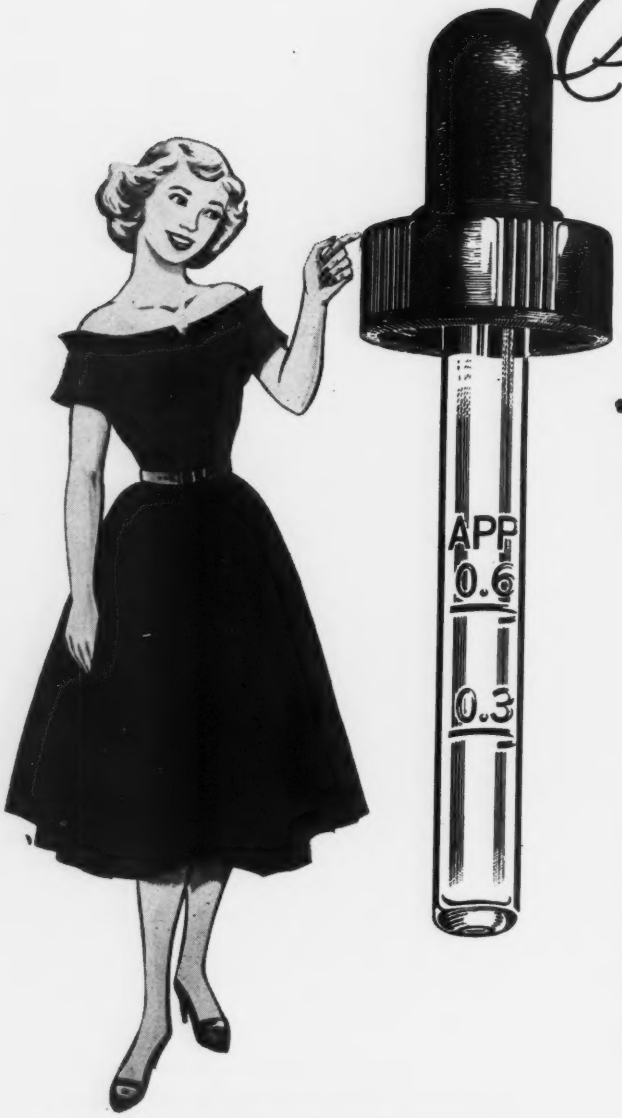
One of the most carefully planned secret research projects of this era has just been completed by Procter & Gamble. This extra, super research project has

(*Continued on page 185*)

Colonial

adds the

Touch That Sells!



CUSTOMERS tell us that Colonial droppers and dropper assemblies often add the "selling touch" that sparks unit sales. Colonial's *eye appeal* becomes real *buy appeal* in today's hurry-up marketing picture. Spotless, fresh Colonial dropper assemblies are one of the intangibles that make package units click with consumers.

Remember, too—that the Colonial program of swift, accurate service and prompt delivery are operating fundamentals. Get full information from one of our sales representatives at left, or if you prefer, write or call direct.

Specialists in Glass and Plastic Droppers and Assemblies for nearly a quarter of a century

CONTACT THESE COLONIAL REPRESENTATIVES

CHARLES E. SCHWAB
122 E. 42 St., New York 17, N. Y. - OXford 7-0760

HARRY M. GRABER
811 S. 53rd St., Philadelphia, Pa. - GRanite 6-6311

ALLEN J. GRETSCH
327 LaSALLE St., Chicago 4, Ill. - WAbash 2-1619

GABLER & GABLER
435 S. LaCienega Blvd., Los Angeles 48, Cal.
BRadshaw 2-2995

COLONIAL APPLICATOR CO.
VINELAND, NEW JERSEY

BERNARDIN

CLOSURES

...they pay their way on your capping line

because

they speed up production through consistent uniform performance

Since 1881

BERNARDIN BOTTLE CAP CO. INC.

EVANSVILLE, INDIANA

package with a purpose!

Here's how you can create new sales appeal for your products with modern, self-dispensing aerosols

Many personal products—products like sun-tan lotion—are new and better when they're packaged in an aerosol, because the aerosol is more than just a container. Aerosol packaging contributes efficiency, ease of use and selling appeal to almost any product. You can add new consumer preference to *your* product, by packaging it in an aerosol.

It's easy to do because custom aerosol fillers have the specialized knowledge and equipment to help you. For a list of qualified custom fillers near you and for free marketing data on the profitable market for personal products in aerosol form, write: E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division, 342, Wilmington 98, Del.

Best-selling aerosols are powered with

FREON* *propellents*

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING... *THROUGH CHEMISTRY*

*FREON AND COMBINATIONS OF FREON- OR F- WITH NUMERALS ARE DU PONT'S REGISTERED TRADEMARKS FOR ITS FLUORINATED HYDROCARBON PROPELLENTS.

(*Continued from page 181*)

just born fruit in a lotionless permanent wave.

We almost said the first lotionless permanent wave and perhaps it is that by a very narrow margin.

When Procter & Gamble first entered the permanent wave market, they began a characteristic series of market and motivational research studies. In these studies they found out quite a lot about the permanent wave lotion. Chiefly, the fact that women did not like the lotion at all. They did not like the way it dripped. They did not like the way it smelled. They did not like the messiness and the trouble and they did not like the way it applied unevenly so that sometimes one curl turned out better than another.

The order soon went around "Scrap the lotion" and the P&G technicians went to work.

During the last two years a tremendous amount of work in laboratory and in market testing has gone into a new lotionless permanent which will soon appear. In the deepest secrecy, and with all of the cleverness of an Oppenheim novel, the P&G people have tested the product, first in their laboratory and then in P&G's own beauty parlor and then with carefully selected consumer groups, and finally with a blind test using samples in a few selected cities. During all of these surveys, the product was not identified and the deepest secrecy surrounded each move.

When P&G first went into production, the waving ingredients were put into end papers which were then enclosed into a special moisture-proof and airproof foil packet. Trouble started right at the beginning of production. The high-speed machinery shattered the too brittle paper into pieces. This was overcome and distribution of the product started this month.

There will be no market testing or spot or sectional distribution in the new product, which is called Pace. In common with the strategy in this trade in a big company when they are sure that they have something hot which another competitor can match, saturatation in depth on the national market is the order for the day. Pace advertising will hit the American public hard and immediately in TV, magazines and newspapers.

Now comes the astounding thing in this whole cloak and dagger research episode in which P&G spotted spies behind every lamppost and peeking in every window and lurking on every corner.

Just one week after the press conference announcing Pace and plans for this promotion, the Gillette Company sent out releases describing Self, a lotionless permanent wave. In Self, fabric rather than paper is impregnated with the wave preparation and the waving cycle requires only 15 minutes. Now comes the critical question, "Who was peeking at whom and if so, when, where and how."

Better Retailing

During this year of exuberant demand when even mediocre advertising has often done a good selling job, a very high percentage of the retail trade have been abdicating some of their functions as a merchandiser and turning over large part of the selling effort and the selling expense to the manufacturer.

This has been a lovely period for the retailer who has decided that, while still earning his full discount, he need contribute not too much in the way of selling except making the goods available.

Particularly in the supermarket field executives have repeatedly made the statement that their operating policy was to insist that the manufacturer build product demand while the retailer serves only as a local distributor.

It is, therefore, somewhat startling to see these food market people realize that they do have a great deal of control over competitive brand selling, and that largely irrespective of the volume of a manufacturer's advertising that they quite substantially control sales within their store.

At the recent National Association of Food Chains annual meeting, the executive of one big chain made the statement that by slightly bettering shelf position, even with equal space within their stores, that they had brought the ratio of sales of one product up from 1-to-4 to 3-to-5 against its competitor. Also, better shelf position and more space made the third ranking bread the top-seller.

Of course, experiments and tests of this sort were once fairly common and a great many have been reported in this department. One example stands out clearly in our mind as we published it several years ago.

A leading chain, experimenting with shelf position for the three leading major brands of soap, alternated these brands periodically in a shelf position at eye level, above eye level and below eye level. In this test, irrespective of the normal marketing place of the brand of soap, the one at eye level substantially outsold the other two brands and the one which happened at any time to be placed below eye level substantially trailed the other two in sales.

It may be that we are coming out of this period of abject dependence on manufacturers advertising by the better retailers and we will see more merchandising and more creative selling at the point of sale by the more capable retail merchants. We think that creative selling and independence on the part of the retailer, in a proper balance with the manufacturers advertising, will be a very constructive step toward expanding business.

Ragged Traffic

Many are the headaches which the supermarket is giving to other retailers. One of the most recent comes from shopping centers. Here, it is said, because of the supermarket's method of advertising and the consumer's habits in shopping in these stores, it is getting very hard for the other merchants to build up enough traffic for the shopping center to make business pay on Monday, Tuesday, Wednesday and Thursday.

Elusive Motive

Motivational Research has become one of the most important tools in modern marketing. In recent months, however, there has been a growing controversy among sales and advertising men as to whether Motivational Research has gotten out of

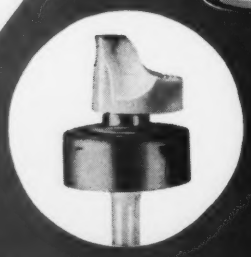
for repeat sales

COMPLEMENT BOTTLE BEAUTY

with this RISDON aerosol valve's

BEAUTIFUL SPRAY PERFORMANCE

- Wider cone, finer, drier spray cloud and longer lasting contents promote customer satisfaction and brand loyalty.
- Applicable to both 2-phase and 3-phase spray products in either coated or uncoated glass, plastic or metal containers. Special actuator design gives top quality performance on virtually any pressurized product including ultra-low pressure products, water-base products and products not soluble in propellant.
- Permits greater formulation latitude – minimizes propellant – facilitates elimination of dilution effects on fragrance or other qualities of product.
- No metal in contact with contents – No spring – Instant "on-off" action. Vertical or Horizontal spray. Also available with foam actuator.
- Available with custom-designed metal or plastic caps.



RISDON GB VALVE with "MICRO-MIST" ACTUATOR (PATENTED)

contact Risdon for further details and free operating samples . . .

RISDON

THE RISDON MANUFACTURING CO.

VALVE DIVISION

500 Risdon St., Naugatuck, Conn.

RI-71

bounds and is trying to prove more than it is capable of proving.

Among the most skeptical businessmen in regard to motivation are the retailers who are closest to the consumer. For instance, here are the recent remarks of one of the outstanding retail executives in the country, "In retailing, we are always guessing. We never know. Our success or failure reflects the average quality of the guess. We know nothing about the individual needs of many of our individual customers. We know not whether she is coming to us for specific needs or going to our competition.

"She doesn't know what fabric, color or design she is going to want 90 days hence, so she could not tell us if she would."

Department Store Data

"The Changing Competitive Position of Department Stores in the United States By Merchandising Lines" is a new book which has just been published by the University of Pittsburgh Press.

This is an investigation into the changing relative position of department stores in the United States by merchandising lines covering the period from 1929 through 1953. This twenty-five year period has covered the widest possible extremes in economic conditions, from the severest depression to the greatest high in prosperity the country has ever known.

Because of a multitude of changes that have taken place in this so-called era of revolution, some people have challenged the position of the department store, both in general distribution and more specifically in the distribution of the industries with branded, packaged products.

These studies show that the department store has not lost its competitive position in the department that this book classifies "toiletries, drugs and drug sundries."

During this entire period the contribution of this department in sales as a percentage of the sales of the entire store has shown a 12 per cent increase. In 1929 the annual percentage contribution of this department to the sale in the entire store was 2.4 per cent. This percentage contribution held fairly even until it reached a peak of 3.2 per cent in 1905. In the final year of the survey, that is 1953, it stood at 2.8 per cent.

Another table in this book shows the merchandise lines in which department stores gained in a relative market position, according to percentage gain and as a per cent of total market sales for these lines during the years 1929-1953.

Toiletries were among those lines which showed a competitive retail gain for department stores. According to this study, in 1929 this department did 8.7 per cent of total market sales. In 1939, 11.2 per cent; in 1949, 9.9 per cent, and in 1953, 10.6 per cent, a gain in market position over these twenty-five years of 21.8 per cent.

In still another table comparing this gain of 21.8 per cent in market position, it was shown that the twenty-five years had brought about a gain of physical volume in the department of 1.5 times and a gain in current dollar volume of 258 per cent.

This book shows the toiletries department has stood up in every analysis among the favorable departments in the department store. This department has shown a very favorable gain over this entire period in relation to its competitive position with other retail stores and in its relation to other departments within the department store.

Those who have a sincere and optimistic faith in the future of the department store in this industry will find a great deal of comfort and reassurance in this analysis.

Invitation to Criticism

Here's what the president of a leading discount chain said at a recent convention. "Some of the top brands who have come along with our policies have experienced growth in those areas. A number of the very biggest companies in your field are now selling us unbranded merchandise. We are buying this merchandise for as much as 25 per cent less than the same merchandise is getting when it carries the well known brand name.

This is a saving we are passing on to our customers."

We recall that period in the late 30's when advertising was under pretty severe indictment by a number of politicians and a larger number of eggheads. That was in the days of such books as "20 Million Guinea Pigs." It was a period when advertising was subjected to a torrent of adverse criticism. At this time advertising made a very stalwart defense with some pretty conclusive proof that advertising did not increase the cost of merchandise. They proved in fact, that it was the instrument of mass marketing which actually decreased the cost of goods.

We have had a very uneasy feeling lately that if the wheel ever turns and we enter a similar period of critical examination of the economic effects of advertising, that we would not so easily prove that a great deal of present advertising is an economic blessing. Certainly we would be unable to prove that in many industries that advertising is lowering the cost of distributing goods to the consumer.

This testimony by one of the very substantial retail distributors is not good testimony for some advertising.

Question Federal Reserve Retail Figures

Many people still use the figures on department store sales which have been published by the Federal Reserve System since 1919. Now an economist of this same system questions the value of these figures unless they are very carefully interpreted.

Some of the reasons for this decreasing value of these figures are: (1) the percentage of department store sales in comparison with total retail sales have been declining, (2) department stores sales do not always move in the same direction as all retail sales, (3) in certain areas the opening of a new department store or the drop out of an old department store radically alters the value of the figures, (4) irregularities in the calendar tend to make these

figures not representative of certain seasons.

Another index which has been widely used by economists and businessmen is the Bureau of Labor Statistics cost of living index. This, too, is now questioned by various businessmen.

Many food manufacturers believe that the BLS does not sufficiently emphasize the fact that it is elements other than foods which have been skyrocketing costs in many months. These food executives are also disturbed with the fact that the BLS index is based on regular store prices which does not take into account today's market where coupons, promotions, premiums and gimmicks are offering the consumer substantial price concessions and the cost of living substantially cut fullest prices.

Another criticism is that over the years the government has used the same products in the market bracket for its comparison, although it does not necessarily follow, the consumers are buying these identical products. However, the government statisticians are obliged to use these items in order to maintain the same comparisons, but the smart shopper does not do this.

Food Advertising

We quote here some remarks by Alynn Shilling, vice-president in charge of advertising and sales promotion for National Distillers.

These remarks appeared in a recent issue of Advertising Age. We suspect very much that Mr. Shilling is speaking in a very lucid way the thoughts of an increasingly large body of people in the advertising profession.

"Modern advertising," Mr. Shilling said, "is not a genii, it has no magic elements. It is an increasingly growing expense for most corportations. But in this era of abundance in this country, in this era of fabulous production, the mass marketing of goods would literally drop dead if, by some strange quirk, the medium of communication with our public, which is advertising, disappeared.

"It is a truism to say that American advertising techniques are the channels, the funnels, the highways over which all the goods we produce reach the consumer."

Quoting from an article that appeared recently in Harper's Magazine, Mr. Shilling said that he and "all reasonable men in this business heartily agree: 'I have grown very tired of clever ads, the ads that have to be reread before you can tell what they are supposed to be advertising. I am weary of men sitting on horses, perched in trees, riding in hand cars. I am wearier still of men with beards, eye patches and tattoos. I am even bored with pictures of girls, emaciated girls, striking odd poses with neckties or perfume for men, and I am sick of ads written in bad English.'

"Another subject I should like to touch upon," Mr. Shilling said, "is the increasing tendency on the part of some corporations, agencies and advertising managers, and alleged scientists, to make advertising a matter similar to the exact sciences, such as physics and metallurgy.

"We are told that the very complex and unpredictable factor, the human mind, can be conditioned to react as desired merely by exposing it to the prescribed stimulae. There may be some slight element of truth in this connection, but I have too much respect for the human mind to believe that human beings can be taught like a seal to react to a piece of fish.

"In the practice of psychiatry, upon which much of this so-called scientific advertising surveying is based," Mr. Shilling said, "a professional psychiatrist will spend as much as 18 months, three times a week, to come to a conclusion with respect to one individual's motivations.

"If it takes this much time, energy and patience to determine the motivations of one individual, how can we find out what prompts the response of millions of people to buy or not to buy a certain product?

"There is no exact or infallible formula for effective advertising," he said. "Certainly, however, at the top of the list of advantageous ingredients designed to produce good advertising, would be the dependable, proven element of good common sense. Closely associated must be the element of good taste and believability."

About TV

"Creeping Mediocrity Bringing Boredom to TV." That's what the head of one of our leading advertising agencies, a man who places quite a few million dollars in television, told a recent convention of the Association of National Advertisers. Here are some of the quotes from his talk:

"John Crosby says it is becoming the victim of 'creeping mediocrity'."

"Edward R. Murrow says that in TV we are 'coming perilously close to discovering the real opiate of the people'."

"Maxwell Anderson says, 'There is no choice among stations at present. Wherever you turn you get childish stuff'."

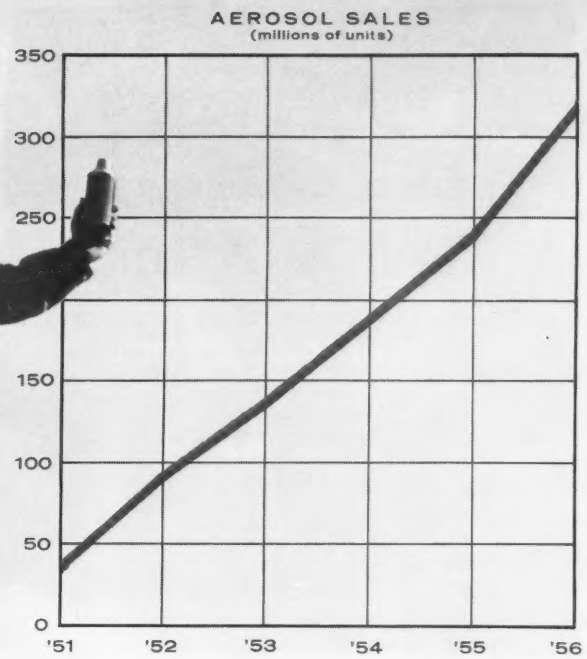
A nameless expert says, "It is a case of the bland leading the bland."

A highlight of this speech were some studies and charts showing the "boredom factor in television." The boredom factor is determined by the percentage of people who remark about any program, "I am tired of it." "Same old stuff." "My interest wore out."

We will not cite charts with the names of programs because it is a little bit too cruel, but it is surprising to note the number of TV programs now or recently so popular where the boredom exceeds one-third of the listeners.

In general terms here is an explanation for the boredom factor. 'Children, a generation ago, perhaps saw a circus once a year. Today's youngsters see two a week. Tomorrow's acrobats may literally have to break their necks—if they want to stay in business."

This expert then asked the question, "Are we using up our interests so fast that boredom sets in with abnormal and destructive swiftness?"



AEROSOL PACKAGING

can start sales climbing for you!

Here's how we can help . . . You know how dynamic the aerosol field is—and how profitable it can be. You've seen aerosol sales increase about thirty per cent, year after year, with no end to this phenomenal growth in sight.

Do *you* have a product that could share in this growth?

If it can be sprayed, brushed on, dusted or daubed, your product is a likely candidate for aerosol packaging. And General Chemical will be glad to help you get started.

Without cost or obligation to you, we will supply fact-packed technical manuals and basic market information . . . data on many promising new types of aerosols . . . and extensive information on the valuable services offered by contract fillers—who can put up your product in aerosol form for test marketing and handle full commercial production, too.

We will be glad to tell you, also, how "Genetron"® aerosol propellants can put exactly the right "push" behind your product. To arrange for a special presentation, simply call or write.

"genetron" department
GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N.Y.

GC Allied Chemical

The right propellant for every aerosol need

genetron®
aerosol propellants

Owens-Illinois Assures You A Complete Packaging Approach

Co-ordinated Research

Pure research into fabrication of glass, *packaging research* into processing and handling methods in customer plants, *market research* into consumer attitudes. All add up to greater packaging value.

Engineered Design

At Owens-Illinois, your package's *three* needs are taken into account: 1) Considerations of its function in the retail store, 2) its operating efficiency, and 3) its consumer utility.

The Right Container

Versatility of facilities and talents make O-I your best source of supply. In container development—beauty, utility, tradition are blended in the right proportions for your product's needs.

The Right Closure

Through long and continuing research O-I has developed the most advanced metal and plastic closures. Helping you choose the right closure is another function of O-I's packaging service.

Needed Fitments

O-I specialists are keenly aware of sales benefits derived from plastic shaker and pour-out fitments which are not "gadgets" but which increase consumer satisfaction with your product.

Merchandising Cartons

Modern cartons are developed only through systematic consideration of their opportunity to serve you in the retail store and warehouse . . . as well as on your own filling line and in transit.

Metalized closures are another part of O-I's complete packaging service

Give your salespackage this TOUCH OF GOLD ... an O-I metalized closure!

To your customers, a salespackage capped with golden color signifies a *special* product.

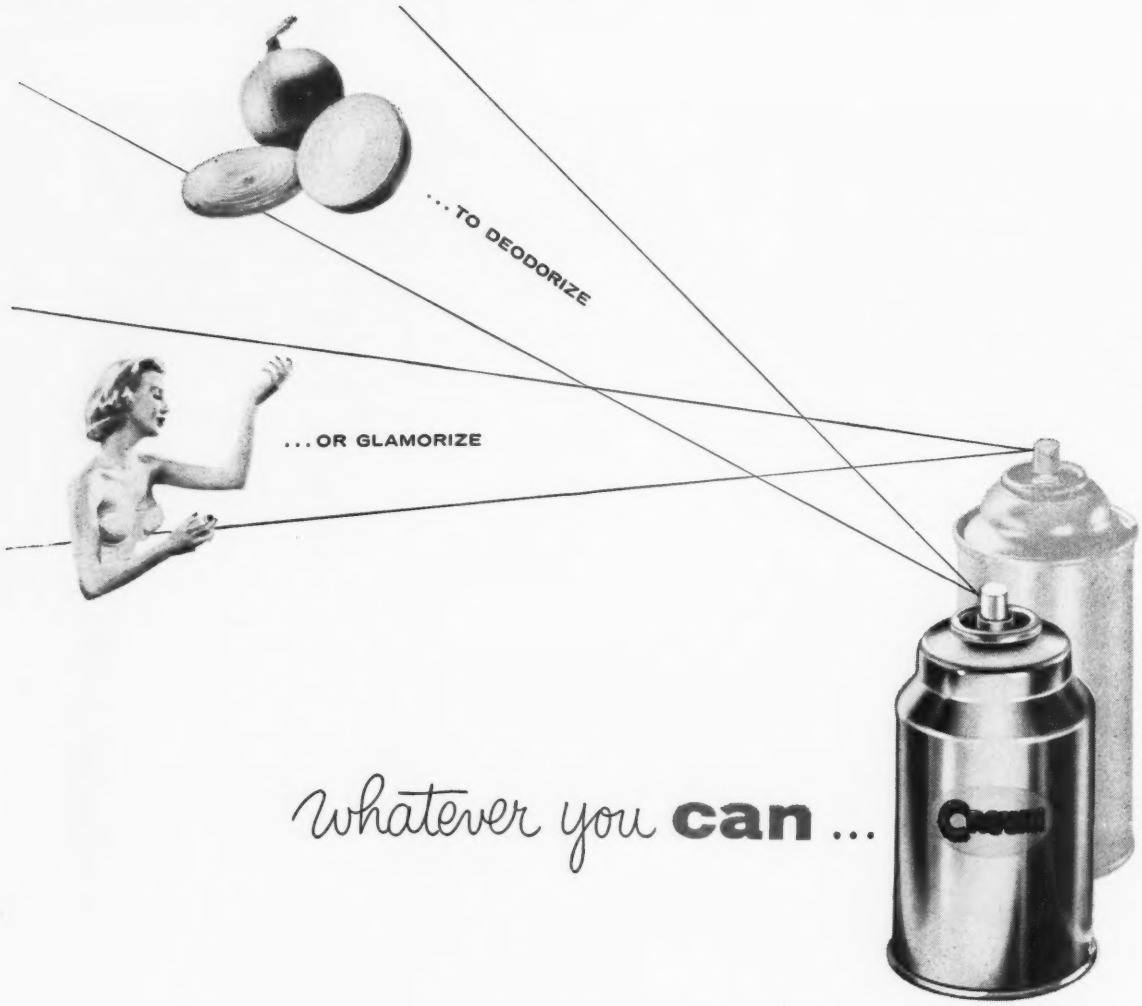
That's why a metalized closure—as part of a well-designed package—is a sure way to draw attention to your product . . . to express its quality . . . to compel sales action.

With all their sales value, metalized closures are but one part of Owens-Illinois' complete packaging service. This service includes virtually every type of metal or plastic closure . . . complete selection of stock containers as well as custom designs . . . label designs . . . special fitments . . . merchandising cartons.

Ask your Owens-Illinois representative for complete details on metalized closures or any part of O-I's packaging service. Call him today!

METAL AND PLASTIC CLOSURES
AN (O-I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO



whatever you **can** ...

can with CROWN Spra-tainers

For pressurized room fresheners or personal deodorants—for literally hundreds of household items and toiletries such as soaps, cleansers and polishes—*can* with CROWN, the only source for Spra-tainers . . . fabricated or seamless.

Spra-tainers offer the filler and marketer definite advantages. Metal guarantees no breakage. Seamless construction provides high-styling. Full wrap-around lithography lends beauty and high-fashion. And, if style is not a factor in your product merchandising, CROWN offers the conventional fabricated Spra-tainer.

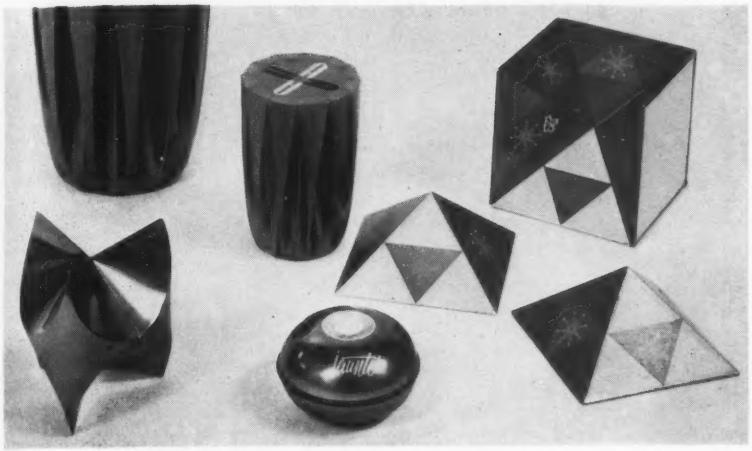
Write for your copy of CROWN's new 3rd edition—"GUIDE TO PRESSURE PACKAGING." Crown Cork & Seal Company, Inc., Can Division, 9328 Ashton Road, Philadelphia 36, Pa.

whatever you can . . . call on CROWN

CROWN CORK & SEAL COMPANY, INC.

MANUFACTURERS OF CLOSURES, CONTAINERS AND MACHINERY

News in Packaging . . .



Packages of the future will be objects of sculptured beauty, bearing little or no resemblance to containers of today, according to an announcement by the Aluminum Company of America, which recently unveiled its aluminum Forecast packages. The drum containers are designed for dry products that can be dispensed through a shaker top, the tripod container for lotions and other liquids. Bath salts, face cream or similar products might be packaged in the triangular containers, which can be nested together to form a cube. Hair sprays, perfumes, insect repellents and other liquid sprays can be packaged in the spherical shaped aluminum package.

Monroe-Danford Incorporated

Monroe-Danford, a partnership for the past two years, has been incorporated under the New Jersey state laws, according to an announcement. Donald M. Shaw is president; Maxwell D. Smart, vice-president. The company is now located at a new address: 50-48th Street, Weehawken, N. J., UNion 6-1277.

The firm represents several companies providing packaging items and services to the cosmetic and pharmaceutical trade.

Cyclax Hair Mist is the first hair lacquer packaged in Australia to use the "Micro-Mist" mechanical break-up actuator of the Risdon Manufacturing Co. The valve and actuator are made by National Radiators, Ltd., Port Melbourne, a Risdon licensee, and the container by Containers, Ltd., also of Melbourne. The four-and-a-half ounce hair spray sells for the equivalent of $1.85.

Drug and Cosmetic Packaging Trends

Entries in the 1958 carton contest of the Folding Paper Box Association indicate that drug and cosmetic manufacturers are utilizing striking color schemes and related-item combinations to achieve brand identification, according to Gustav L. Nordstrom, FPBAA executive director. Brand-identification features are being used for ethical drug packages as well as for toiletries, and cosmetics are being upgraded through related-item combinations in gift cartons, Mr. Nordstrom said.

Other trends noted in the entries: packages for small items to discourage pilferage; vertical displays to conserve shelf space; window cartons to provide visibility with protection; cartons for hard-to-stack, irregularly shaped items to enhance mass displays; close tie-ins with advertising themes.

Kimble Glass Representatives

Carl H. Drescher and James C. Simms have been appointed sales representatives of the Container and Accessories Division of Kimble Glass Company, according to an announcement by George A. Mounier, division sales manager. Mr. Drescher has been assigned to the firm's Montclair, N. J., office, and Mr. Simms to the Philadelphia branch.

Glass Container Shipments

Medicinal and health supply packers received glass container shipments of about 2.8 billion units during 1957, compared with about 2.6 billion in 1956, according to figures announced by the Glass Container Manufacturers Institute. Lesser gains were made in shipments of toiletry and cosmetic jars and bottles.

Folding Carton Sales Rep. in S.F.

R. J. Rasmussen has been named sales representative in San Francisco for the Folding Carton Division of Continental Can Company, according to an announcement by H. G. Murphy, Pacific Coast sales manager. Mr. Rasmussen will have his offices in the Russ Building.

R. J. RASMUSSEN

A packaging engineer, he was instrumental in the development of two folding boxes which won merit awards in national folding box competitions.

Avon Cosmetics is packaging its liquid make-up base, "Fashion Film," in clear glass bottles with crystal-cut forward edges, manufactured by the Hazel-Atlas Glass Division of Continental Can Company. The pink plastic caps are supplied by Owens-Illinois Glass Co. Labels are pink, white and gold; cartons are pale blue, pink, gold and white. Information on the bottle label is reprinted on the carton's top flap along with a "Good Housekeeping" guarantee.

A PACKAGING TEAM NEEDS

More and more, it's the package you use that helps decide whether your sales and profits grow. That's why more and more packaging decisions are becoming *team* decisions—a team made up of many specialists within a company. But to make a packaging team complete, it needs the "outside" viewpoint. It needs one more person—an Anchor Man! He's a glass packaging expert who has helped solve hundreds of packaging problems and who can help solve yours through this wide experience.

The Anchor Man has a complete line of Anchorglass® containers, available in amber, crystal and green—in all standard styles and sizes. They're containers whose uniform quality is safeguarded by hundreds of daily checks, tests

AN ANCHOR MAN!

and controls. These same high standards are reflected in his complete line of Anchor® metal and molded closures. That means he can recommend the container-closure combinations which are best for you.

Contact your Anchor Man. We know you'll want him on your team, too. Anchor Hocking Glass Corporation, Lancaster, Ohio. Branch offices in all principal cities.

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Glass Containers and Closures

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TOUCH-N-SPRAY

TRADEMARK

THE ALL PURPOSE AEROSOL PERFUME ATOMIZER FOR THE PURSE

TOUCH-N-SPRAY Refillable ...

TOUCH-N-SPRAY Long Gold Metal cap to prevent accidental activation.

TOUCH-N-SPRAY So easy to use—so light in weight—so very, very smart.

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Patent thoughts and trends

By THOMAS CIFELLI, JR., PATENT ATTORNEY*

Numerous U.S. Patents Issuing To Foreign Inventors

For a rather long period, roughly from about 1940 to 1950, it is understandable that there was very little effort made by foreign inventors to obtain U. S. patents. World War II and its aftermath of stricken economies in most European nations took their toll patentwise. The basic problem was one of survival during that period, and the creation of new information, i.e. the making of inventions, could not expect a priority rating in the efforts of the European peoples. The early 1950's, however, saw the gradual strengthening of the European nations and it was soon observed that U. S. patents were being obtained by a few European nationals. Since it takes time, measured in years, to make inventions, and it takes further time, about 3 years as a rough average, to secure a U. S. patent on an invention after application therfor is filed, it understandably was not until rather recently, that any appreciable number of U. S. patents began to be issued to Europeans. Judging from the weekly issues of the U. S. Patent Office Official Gazett, it appears to be beyond question that foreign inventors, namely Europeans, have again taken their place as substantial contributors to the U. S. patent literature.

While no exact statistics have been compiled, it appears to this observer that the Germans and Britishers are the most prolific of the foreigners, followed, not too closely, by the French, Dutch and Italians.

The absence of Russians as recipients of U. S. patents in understandable, on the ground of the public policy of the Soviets with respect to scientific information. This policy, like other Russian policies, appears to be rather difficult for non-Russians to understand, but it seems to be founded mainly on the Russian coolness towards the patent system in particular. However, there appear to be recent indications that Russians are being permitted to interchange scientific ideas with others and it may well be that the Russians may be permitted by their government to make certain limited contributions to the patent literature of the world, even though Russia itself may not institute a patent system of her own. That Russia has no such hatred of the capitalistic patent systems of the free world that tain; for, it is understood that Russhe refuses to profit thereby is cersia has a rather complete library of U. S. patents and keeps currently informed of new patents as they issue.

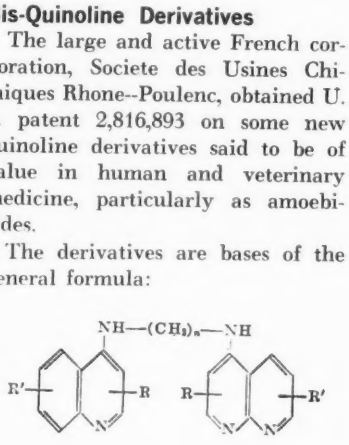
Getting back now to the actual question of the contributions of foreign inventors to the U. S. patent system, it is of interest to learn that the drug field is one of the main areas in which such contributions are being made. This of course is not surprising, having in mind the preeminence of the Europeans in the drug field over the years.

We shall now take a look at a representative group of U. S. patents issued recently on the same day to European inventors.

Bis-Quinoline Derivatives

The large and active French corporation, Societe des Usines Chimiques Rhone--Poulenc, obtained U. S. patent 2,816,893 on some new quinoline derivatives said to be of value in human and veterinary medicine, particularly as amoebicides.

The derivatives are bases of the general formula:



and the salts of such bases, where R represents a hydrogen atom or methyl radical in the 2- or 3-position of the quinoline nucleus, R^1 represents a halogen atom or methoxy group in the 6-, 7- or 8-position of the quinoline nucleus, and n represents an integer greater than 2.

An idea of the process for making the new compounds is given by the following example, taken from the patent:

A mixture of 29.7 g. of 4:7-dichloroquinoline, 9.1 g. of hexamethyene diamine (96.5 per cent) and 60 g. of phenol is boiled for 2 hours under reflux. The resulting mixture is poured, after cooling, into an excess of a caustic soda solution (10 per cent). The product which precipitates is filtered and is then washed with water, following which it is triturated with 300 cc. of boiling methanol. The product is then filtered and washed with methanol, whereby 75 g. of wet crude base are obtained. This crude base is again suspended in 1.1 litre of boiling methanol. 37 cc. of concentrated hydrochloric acid (d.=1.9) are then added to the suspension to dissolve the base. The resulting solution is filtered hot, whereafter it is left to cool for the product to crystallize. The crystals are removed by filtration, washed with methanol and dried in vacuo. In this way 27 g. of 1:6 - di - (7' - chloroquinolyl - 4' - amino)-hexane dihydrochloride is obtained. A small portion of this salt is dissolved in hot aqueous methanol and rendered alkaline with ammonia to give the corresponding base, which melts at 280-281° C.

Anaesthetics

A German company with a characteristic jaw-breaking name, Casella Farbwerke Mainkur Aktiengesellschaft, secured U. S. patent 2,816,-894 on an invention of two of its chemists, the subject matter being new anaesthetics.

In the words of the inventors their new compounds are obtained

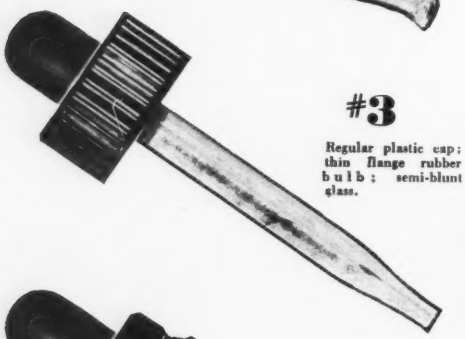
*Richards and Cifelli, Newark, New Jersey

NEW PERFECTION = DROPPING PARTS

QUALITY UNIFORMITY CLEANLINESS SERVICE

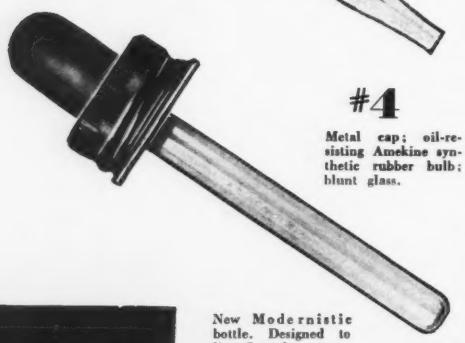
#1

Non-rolling, extra-depth, Bakelite cap; thick flange rubber bulb; Saftee - ball glass.



#3

Regular plastic cap; thin flange rubber bulb; semi-blunt glass.



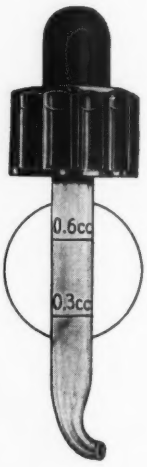
#4

Metal cap; oil-resisting Amekine synthetic rubber bulb; blunt glass.

By the Originators and World's Largest Manufacturers of Screw-Cap Dropping Parts

Since 1931, when the screw-cap dropping part was originated by Pennsylvania Glass Products, the world-wide acceptance of New Perfection has been increasing. The fact that the New Perfection Dropping Part is the most practical and sanitary dispensing unit for liquid preparations accounts for its popularity and the steady growth of our operations is due to the efficiency with which our products are manufactured and distributed.

Our exacting standards for quality, uniformity and cleanliness guarantee that each shipment will meet your most rigid specifications. Our policy is to produce and sell the best in dropping parts—and thus merit your continued patronage in the future as we have in the past.



#2

Non-rolling, extra depth, Bakelite cap; thick flange rubber bulb; special ben glass (CALIBRATED in color)

New Modernistic bottle. Designed to lie flat for convenient labeling. Oval front provides ample label space.

New Perfection Dropping Parts, either plain or CALIBRATED IN COLOR, can be supplied to fit your bottle or with our new Modernistic style bottles. Our bottles are available in Amber, Blue, Green or Clear glass in 1/8, 1/4, 1/2, 1 and 2 oz. capacities. Special oil-resisting AMEKINE synthetic rubber bulbs can be supplied for use with oil products, or natural rubber bulbs for general usage.

WRITE FOR SAMPLES AND QUOTATIONS

PENNSYLVANIA GLASS PRODUCTS CO. INC.

"Glass Goods of the Better Kind"

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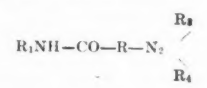
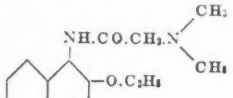
by allowing to react in any sequence the following compounds

(wherein R_1 means a radical of the group consisting of naphthalene and 5,6,7,8-tetrahydronaphthalene which radical contains in the 1-position the radical X and in the 2-position a substituent of the group consisting of alkyl, alkoxy, alkylmercapto, chlorine; one X means NH_2, the other X halogen; R_2 means alkylene; Y means hologen; R_3 means a radical of the group consisting of hydrogen; alkyl and an alkyl group which is connected with R_4; R_4 means a radical of the group consisting of alkyl and an alkyl group which is connected with the alkyl group R_3) and converting the compounds thus obtained and corresponding to the formula.



(wherein R_1, R_2, R_3, R_4 have the aforesaid significance) into their salts which salts include the corresponding quaternary ammonium salts.

The preparation of 1-(omega-dimethylamino - acetyl) - amino - 2-naphthol-ethyl ether is given in the following example taken from the patent.



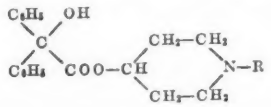
264 parts of 1-chloroacetyl-amino-2-naphthol-ethyl ether (prepared from 1 - amino - 2 - naphthol - ethyle ether and chloroacetylchloride in glacial acetic acid in the presence of sodium acetate; melting point 164° after recrystallizing from methanol) are heated with a solution of 135 parts of dimethyl amine in 1500 parts of benzene for 10 hours under pressure to 110-115°. On cooling, the separated hydrochloric dimethyl amine is removed by filtering with suction and the benzene filtrate is concentrated by vacuum evaporation. The remaining residue is the 1-(*w* - dimethylamino - acetyl -) amino-2-naphthol ethyl ether which after recrystallizing from benzene-benzine shows a melting point of 107°.

For preparation of the hydrochloric salt, hydrogen chloride is conducted at 0-5° into a solution of the base in benzene, whereby the salt separates in the form of colorless crystals. After recrystallizing from aqueous dioxan, the substance shows a melting point of 240-241°.

Basic Benzilic Esters

Another German company with a ponderous name, Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, also obtained a patent (U. S. 2,816,895) in the drug field, the compounds being said to be good anti-spasmodics having only a slight toxicity.

The new compounds, which are basic benzilic esters, are represented by the following formula:



wherein R stands for alkyl radicals containing up to 4 carbon atoms, and the acid addition salts thereof.

According to the patent, the effect of administering benzilic N-methyl-piperidyl-(4)-ester was found to be about 3 times that of atropine, while the toxicity of the patented compounds is only 1/3 that of atropine.

Example 1 is reproduced below.

25.6 grams of benzilic ethylester, 12 grams of N-methyl-4-hydroxypiperidine and a solution of 0.5 grams of sodium in 10 cc. of absolute alcohol are mixed; the mixture is heated for 2½ hours to 110-120° C. under a pressure of 80 mm. After cooling it is dissolved in a dilute hydrochloric acid; the clear solution is rendered alkaline with soda, during which operation the benzilic N - methylpiperidyl - (4)-ester precipitates. The yield amounts to 22 grams, the melting point of the compound is at 164° C.; the chlorhydrate melts at 209-210° C.

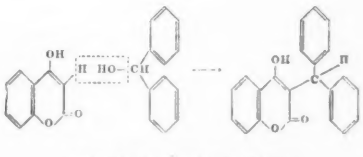
3-Benzhydryl-4-Hydroxycoumarins

The renowned Farbenfabriken Bayer Aktiengesellschaft was issued U. S. 2,816,899 on an invention of two of their employees, the invention dealing with derivatives of coumarins.

Specifically, the compounds covered by this patent are 4-hydroxy-3-benzhydryl-substituted coumarins of the following general formula in which R and R^1 are members of the group consisting of hydrogen, lower alkyl radicals, lower alkoxy radicals, chlorine and bromine and R^3 and R^4 are members selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower dialkylamino, chlorine and bromine.

The inventors assert that these compounds retard or partially inhibit coagulation of human or animal blood and find application as pest control agents.

The compounds can be obtained by condensing 4-hydroxycoumarin or its derivatives substituted in the benzene nucleus, with benzhydrol or its nuclear-substituted products. From the following equation the reaction of coumarin itself with benzhydrol is to be seen; this equation is to be understood as an example for the general reaction between all substituted 4-hydroxycoumarins and possibly substituted derivatives of the benzhydrol.



RECENT PATENTS

2,799,599 — **Askania Corporation — Lustered Fur Hairs**

2,799,613—**E. Mercke (Germany)—Dibromo-Penta-Chloro-Cyclohexane as a Bactericide**

2,799,616—**Monsanto—Nematocides**

2,799,617—**British Drug Houses—Piperazine Adipate Compositions and treatment of Helminth Infections Therewith**

2,799,618—**Hausmann Labs. (Switzerland)—Glycosidal Material Having Activity on the Heart and Vascular Vessels and its Preparation from Plant Sources**

2,799,619—**Am. Home Products—Anti-Excitatory Compositions**

2,799,621—**Armour—Preparation of Adrenocorticotropin and Gonadotropins from Pituitary Material**

2,799,622—**Novo T. L. (Denmark)—Producing Insulin Crystals**

2,799,660—**Miles Labs.—Blood Test Compositions**

(*Continued on page 265*)

Time to get ready with your

Aerosol Suntan Preparations

The Schimmel aerosol laboratory has a wide range of perfumes which have been exhaustively tested for suitability in each type of preparation.

Send us details as to your product and we will be glad to submit samples.

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NEWS...

McNeil Buys 87-Acre Plot

An 87-acre plot near Fort Washington, about a mile north of the Philadelphia city limits, is scheduled to become the principal installation of the McNeil Laboratories, integrating expanded manufacturing operations and reasearch laboratories with administrative offices.

Robert L. McNeil Jr., board chairman of the firm, said a building or buildings aggregating approximately 200,000 square feet of floor space are to be erected. This will occupy about one sixth of the ground area, allowing room for later expansion as required. Occupancy is tentatively set, for late in 1959.

Vick Vice-Presidents

E. B. Newsom, former sales manager, has been elected vice-president in charge of sales and sales promotion for the Vick Products Division of Vick Chemical Company. A. J. Elias has been elected vice-president in charge of advertising and marketing for a major group of Vick products. J. S. Scott succeeds Mr. Elias as advertising manager.

Heads SCC N. Y. Chapter

Harry Isacoff, coordinator of van Ameringen-Haebler's aerosol research and product development laboratories, was recently installed as chairman of the New York Chapter of the Society of Cosmetic Chemists.

HARRY ISACOFF

"Mr. Nose, U.S.A."

Ernest Shiftan, vice-president and chief perfumer of van Ameringen-Haebler, Inc., appeared recently as a guest on WCBS' radio program, "This Is New York", and was introduced by Jim McKay, program M C, as "Mr. Nose, U.S.A."

During the interview, Mr. Shiftan explained that a good perfumer has to have an odor memory for nearly 3000 aromatic chemicals and natural materials. He said that a perfumer must have the imagination and skill to create a blend of as many as 300 of these materials to make a finished product that will have not only lastingness, strength and evenness, but beauty and a definite theme as well.

Firmenich Perfumery Tech. Div.

Ralph C. Zehner has been appointed technical director of the

RALPH C. ZEHNER

Perfumery Division of Firmenich, Inc.

He previously was with Lentheric, Inc. for sixteen years, where he was vice president in charge of operations and for the last year, under ownership of Helene Curtis Industries, Inc., was also director of Eastern operations.

Named to Upjohn Post

Donald A. Harvey, Ph.D., M.D., has been appointed assistant department head of biological control for the Upjohn Company, J. B. Fullerton, the company's director of control, has announced.

Appointed by Mead Johnson

Dr. James W. McNeil has been appointed associate medical director of the Nutritional and Pharmaceutical Products Division of Mead Johnson & Company.

ERNEST SHIFTAN

Joins National Brands Div.

Glenn W. Johnston has joined Sterling Drug Inc. as assistant to Stanley I. Clark, a senior vice-president of its National Brands Division. Mr. Johnston was associated with McKesson & Robbins in St. Louis for eight years as sales manager. He subsequently served as New York regional sales manager. He was also product manager for J. B. Williams & Co.

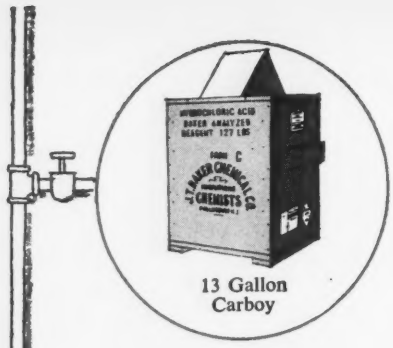
Perfumers' Society Forum

"The Perfumer Speaks" is the theme of the Fourth Annual Symposium, to be held March 20 at the Essex House in New York City from 2 P.M. to 5 P.M. and followed by cocktails and a buffet supper. This is an open meeting and guests are welcome. Subjects and speakers are:

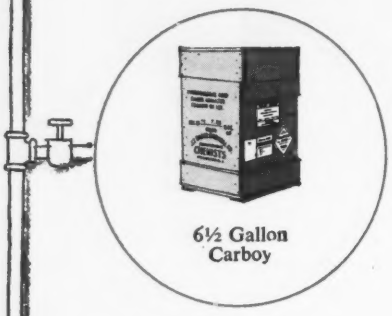
"The Perfumer and His Creations"—Walter Lengsfelder, Fleuroma, Inc.; Ernest Shiftan, van Ameringen-Haebler, Inc.; Everett D. Kilmer, Lever Bros.; "Cosmetics—the Perfumer's Concern"—Dr. Oliver L. Marton, Shulton, Inc.; Dr. Paul G. I. Lauffer, Northam Warren; "Packaging Materials Present Perfuming Problems"—Christian Wight, van Ameringen-Haebler, Inc.; Frazer V. Sinclair, publisher of Beauty Fashion and Drug and Cosmetic Industry; "Perfume, the Ever Present Persuader"—Pierre L. Bouillette, Givandan-Delawanna, Inc.

Chairman of the program committee is Victor DiGiacomo. Other members of the committee are Dr. Lauffer, Mr. Kilmer, Dr. Marton, Mr. Wight, August J. Schwinderman and Mr. Bouillette.

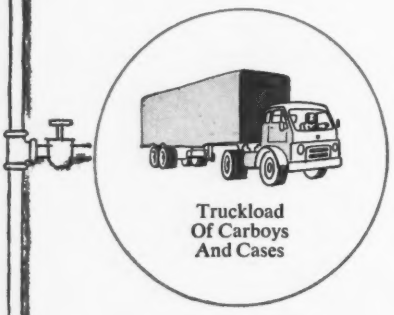
Reservations are $12.50 per person and should be made as early as possible. Remittances should be addressed to Edward D. Morgan Jr., Lever Bros. Co., 101 River Road, Edgewater, N. J.



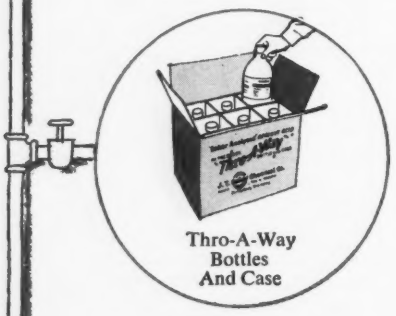
13 Gallon Carboy



6½ Gallon Carboy



Truckload Of Carboys And Cases



Thro-A-Way Bottles And Case

Returnable Bottles And Case

Baker REAGENT ACIDS

Uniform high purity . . . any quantity . . . in the container of your choice

ALL J. T. BAKER REAGENT GRADE ACIDS—regardless of container or quantity—conform to stringent specifications. Every lot—regardless of end use—is subject to rigid controls established by J. T. Baker Chemical Co. to assure you of the highest standards of purity in the industry.

WHY J. T. BAKER REAGENT GRADE ACIDS FOR LARGE-SCALE PRODUCTION USE? Because they combine the advantages of controlled high purity and economy. Because they do an efficient, faster, more predictable job in industry upon industry. Investigate J. T. Baker acids to help you reduce testing time . . . eliminate one or more purification steps . . . minimize variables . . . cut costs without sacrifice of quality or control . . . upgrade your product.

HOW PURE ARE J. T. BAKER REAGENT GRADE ACIDS? Specifications for J. T. Baker Nitric, Sulfuric, Hydrochloric and Acetic Acids and for Ammonium Hydroxide appear below. See how they might work for you.

WHAT CONTAINER TYPES ARE AVAILABLE? 6½ and 13 gallon carboys; Thro-A-Way bottles and cases (6 five pint bottles per case); returnable bottles and cases (10 five pint bottles or 24 one pound bottles per case). Whatever quantity you need—pounds or tons—J. T. Baker offers you highest standards of purity—on-time shipment—economical price.

J. T. Baker Chemical Co.

REAGENT • CHEMICAL • FINE • INDUSTRIAL

Phillipsburg, New Jersey

BAKER REAGENT SPECIFICATIONS

	Acetic Acid, Reagent, Glacial *($HC_2H_3O_2$) Meets A.C.S. Specifications	Hydrochloric Acid, Reagent *(HCl) Meets A.C.S. Specifications	Nitric Acid, Reagent *(HNO_3) Meets A.C.S. Specifications	Sulfuric Acid, Reagent *(H_2SO_4) Meets A.C.S. Specifications	Ammonium Hydroxide, Reagent *(NH_4OH) Meets A.C.S. Specifications
Assay (as *)	99.8%	36.5-38.0%	69.0-71.0%	95.0-98.0%	28.0-30.0%
Residue After Evaporation or Ignition	0.0010%	0.0004%	0.0004%	0.0004%	0.001%
Carbon Dioxide (CO_2)	–	–	–	–	0.002%
Chloride (Cl)	0.0001%	–	0.00005%	0.00001%	0.00005%
Phosphate (PO_4)	–	–	–	–	0.0001%
Sulfate (SO_4)	0.0001%	0.0001%	0.0001%	–	–
Sulfite (SO_3)	–	0.0001%	–	–	–
Total Sulfur (as SO_4)	–	–	–	–	0.0001%
Substances Reducing Permanganate	**PACST	–	–	0.0001%	**PACST
Nitrate	–	–	–	<0.00005%	–
Ammonium (NH_4)	–	0.0003%	–	0.0001%	–
Arsenic (As)	–	0.000001%	0.000001%	0.000001%	–
Heavy Metals (as Pb)	0.00005%	0.0001%	0.00002%	0.0001%	0.00005%
Iron (Fe)	0.00002%	0.00001%	0.00002%	0.00002%	0.00001%
Copper (Cu)	0.00005%	0.00005%	0.00005%	0.00005%	–
Nickel (Ni)	0.00005%	0.00005%	0.00005%	0.00005%	–
Specific Gravity	–	1.185-1.192	1.416-1.424	1.84	0.902-0.896
Free Chlorine	–	0.0001%	–	–	–
Substances reducing $K_2Cr_2O_7$	PT	–	–	–	–

Pirk In New Roche Post

Dr. Leo A. Pirk has assumed the duties of director of the clinical investigation department of Hoffmann-La Roche Inc., it has been announced by Dr. V. D. Mattia, Jr., director of medical research. He will have the title of associate director for clinical investigation.

With Roche since 1938, Dr. Pirk has been responsible for the clinical development of a great number of Roche products. Prior to his association with this firm, he managed his own pharmaceutical manufacturing company in Vienna.

Engelhard Industries, Inc.

Nine firms in the precious metals and precision manufacturing fields have been consolidated to form a single company: Engelhard Industries, Inc. Chairman of the board is Charles W. Engelhard; and the president is Gordon V. Richdale, a financial associate of Mr. Engelhard. The consolidated firms are: Baker & Co., a refiner and fabricator of platinum; Hanovia Chemical & Manufacturing Company, Newark, N. J., a producer of liquid precious metals for the ceramics industry and a producer of gas-discharge lamps; American Platinum Works, Newark, refiners and workers of silver; Amersil Company, Hillside, N. J., manufacturers of fused quartz; Irvington Smelting & Refining Works, Irvington, N. J., and D. E. Makepeace Company, Attleboro, Mass., producers of atomic-reactor components and precious-metal materials.

Named N.Y.A.S. Fellow

Dr. Gertrude Berend, in charge of chemical literature research at Hoffmann-La Roche Inc., has been named a Fellow of the New York Academy of Sciences.

STEWART COWELL

Robert A. Hardt, vice-president of Hoffmann-La Roche Inc., left, accepts the 1957 Man of Year Award of the American Druggist from Dan Rennick, editor of the magazine, at the "Pharmacy Day" meeting of the Pharmaceutical Advertising Club.

Sun's Stearate Dept. to Witco

Witco Chemical Company has bought the stearate department of Sun Chemical Corporation. Joseph L. Kearns, formerly sales manager of Sun's stearate department, has joined Witco in a similar capacity and will make his headquarters in Witco's executive offices in New York.

The same personnel will continue to operate the stearate plant at Wood River Junction, R. I.

J. T. Baker Regional Mgrs.

Stewart Cowell has been appointed Eastern region manager for the J. T. Baker Chemical Co., and Bruno Gherardini, Western regional manager, according to an announcement by Ralph A. Clark, vice-president of the firm. Both appointees will administer sales activities in their respective regions. Mr. Cowell's headquarters will be at 122 East 42nd Street, New York, Mr. Gherardini's at 435 North Michigan Avenue, Chicago.

Mr. Cowell has been with Baker twenty years, first as a sales representative in Detroit and then in the New York area. He is a director of The Salesmen's Association of the American Chemical Industry, Inc., and is a past president of the Chemical and Allied Industries Association.

Mr. Gherardini has been with Baker five years, with his sales experience largely in the Michigan and Indiana areas. He is currently treasurer of the Chemical and Allied Industries Association.

Emmerich to Receive Chemical Industry Medal

Fred J. Emmerich, past chairman of the board of directors of Allied Chemical & Dye Corporation, will receive the Chemical Industry Medal for 1958 "for conspicuous services to applied chemistry," according to an announcement by the American Section of the Society of Chemical Industry, donor of the medal. Mr. Emmerich will receive the medal at a meeting of the American Section following a dinner in his honor at the Royal York Hotel, Toronto, Ontario, Sept. 18. William H. Bowman of American Cyanamid Company, chairman of the American Section, will present the medal to Mr. Emmerich.

Henshall Is Exec Vice-Pres.

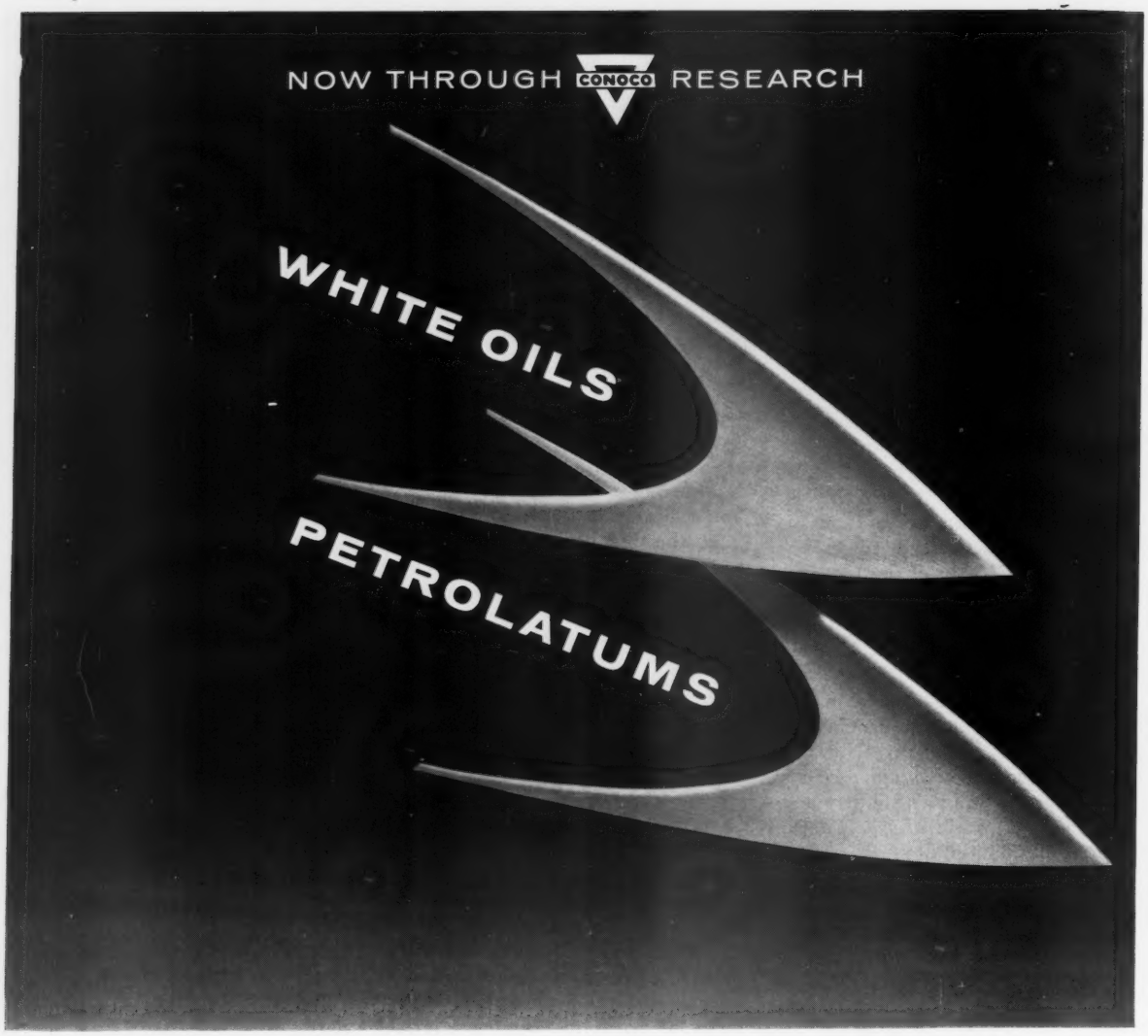
The appointment of Stuart T. Henshall as executive vice-president of Merck Sharp & Dohme, Division of Merck & Co., Inc., has been announced by John G. Bill, president of Merck Sharp & Dohme.

Mr. Henshall was elected controller of Merck after the merger of Merck & Co., Inc. and Sharp & Dohme, Inc. in 1953. He joined Sharp & Dohme in 1930 and became assistant controller in 1943 and controller in 1947. In 1952, he was elected a vice-president of Sharp & Dohme.

Plume & Atwood Plant Mgr.

Robert Ramsbotham, chief engineer for Plume & Atwood manufacturing Company since May, 1956, has been appointed plant manager of the firms Fabricating Division, according to an announcement by Harry Silverman, president of Plume & Atwood. Mr. Ramsbotham will report to Sol Levine, general manager.

BRUNO GHERARDINI



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Mead Int. Production Mgr.

Edwin H. Wiggers Jr., a project engineer for Mead Johnson & Company the last two years, has been promoted to production manager of Mead Johnson International.

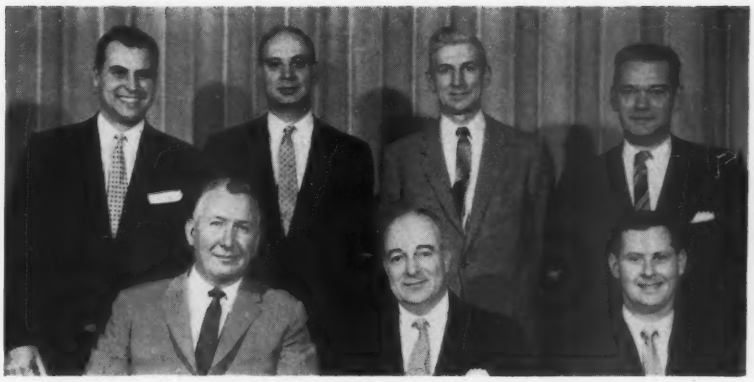
Mr. Wiggers will be responsible for co-ordination of engineering and production requirements of Mead Johnson's foreign manufacturing operations in co-operation with the firm's Evansville engineering department.

Rio Tinto-Dow Limited

Formation of a new company, Rio Tinto-Dow Limited, has been announced by The Rio Tinto Mining Company of Canada, Limited, and Dow Chemical of Canada, Limited.

Initially the new company will concentrate on the production of thorium and rare earths from by-product materials of uranium mining operations in the Blind River area of Ontario. The company will also explore other opportunities in these fields.

The Rio Tinto Mining Company of Canada, Limited, is a mining company with interests in uranium, gold, copper and iron in Canada. Dow of Canada manufactures basic chemicals, glycols, latexes, solvents and Styron at its plant in Sarnia, Ontario.



New officers of the Cosmetic Industry Buyers' & Suppliers' Assn. were elected at the CIBS regular monthly meeting at Toots Shor's restaurant. Seated, left to right: John Duncan of the Hazel Atlas Glass Division of Continental Can Co., first vice-president; William L. Jaeger of Park & Tilford, president; Jay Stephens of Daggett & Ramsdell, Inc., recording secretary. Standing, left to right: J. William Voit of George Luebers & Co., director; James E. Beyer of Lehn & Fink Products Corp., director; Frank Pond of Dominion Products, Inc., director. Also elected but not in photograph; Eugene C. Roberts of Lanvin-Parfums, Inc., treasurer; and Lamson Scovill of Scovill Manufacturing Co., second vice-president.

Heads Pharma-Craft. Res. Lab.

Pharma-Craft Corporation has opened a new analytical and research laboratory under the direction of Dr. Walter L. Wuggatzer, former assistant professor of pharmacy at Rutgers University, according to Frank F. Bell, Pharma-Craft president.

"Dr. Wuggatzer will be in charge of new product development and the analysis of raw materials and finished products under the supervision of W. Kedzie Teller, executive vice president," said Mr. Bell.

Members of the board of directors of Knox Glass Incorporated at their regular quarterly meeting, held Jan. 14 at the Greater Pittsburgh Airport Hotel near Pittsburgh, Pa. Seated left to right, are: Howard J. Lacey II, president, The U. S. Corrugated-Fibre Box Co.; Frank M. Long, executive vice-president, The Donner Corporation; C. Horton Smith, president, C. Horton Smith Co.; W. W. Keen Butcher, partner, Butcher & Sherrerd Investment Brokers; and Alexander W. Lansberg, treasurer, Knox Glass. Standing, are: W. B. LaVenture, representing the company's corporate counsel, Reynolds, Richards, McCutcheon and Ely; Harry Zucker, owner, Harry Zucker Glass Co.; Dr. D. E. Vogan, M.D., owner, Mercer Cottage Hospital; Dr. Arthur W. Wishart, president, Knox Glass and chairman of the meeting; J. D. Lynch, secretary, Knox Glass; Edward W. G. Borer, securities analyst, Sheridan Bogan Paul & Co.; and W. G. Kurtz Jr., vice-president, Fidelity-Philadelphia Trust Co. All except Mr. Lansberg, Mr. Lynch, Mr. Borer and Mr. LaVenture are directors of Knox Glass.

Upjohn Company Reorganizes Its International Operations

Organizational changes in the international operations of The Upjohn Company have been announced by Dr. E. Gifford Upjohn, president. Three subsidiary companies have been formed: Upjohn International Operations, Inc.; Upjohn Inter-American Corporation; and Upjohn Overseas Corporation.

Upjohn International Operations, Inc., a management and service organization will be located at the home office in Kalamazoo and serve as headquarters of all foreign subsidiary corporations.

Also headquartered in Kalamazoo will be Upjohn Inter-American Corporation, which will handle trade with countries in the western hemisphere, except those in which Upjohn subsidiaries already operate—Canada, Mexico and Brazil.

Upjohn Overseas Corporation will have its headquarters in Panama and will function principally to handle exports to countries in the eastern hemisphere. Dr. Upjohn said that plans are being formulated for the creation of two subsidiary companies in the first half of 1958—one in Colombia and another in South Africa.

Heads National Aniline

Chester M. Brown has been appointed president of the National Aniline division of Allied Chemical and Dye Corporation. He continues as vice-president of Allied Chemical.

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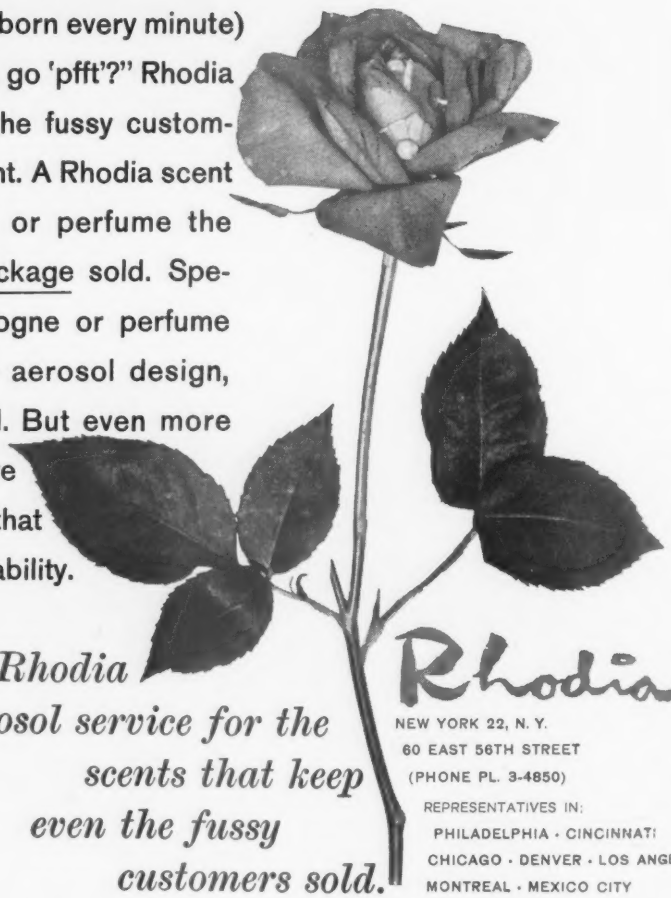

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Perfumers' Society Officers

Jacques Masson of Flam-Haft Laboratories, Inc. has been elected president of The American Society of Perfumers, and Pierre Bouillette of Givaudan-Delawanna, Inc., 1957 president of the society, has been elected chairman of the society's board of directors.

Dr. Oliver L. Marton of Shulton Inc., 1957 treasurer of the society, has been elected vice-president for this year, and Harry Saunders of Givaudan-Delawanna, Inc. has been elected secretary. Edwin D. Morgan Jr. of Lever Brothers Co. has been reelected treasurer.

Newly elected directors are Walter Lengsfelder, Fleuroma, Inc.; Elmer L. V. Sulik, van Ameringen-Haebler, Inc.; Herbert Sommer, Prince Matchabelli, Inc.; and J. Hilary Herchelroth, Oracle Laboratories.

DR. V. D. MATTIA

Hoffmann-La Roche Appoints

Dr. V. D. Mattia Jr. has been appointed director of medical research for Hoffmann-La Roche Inc., according to an announcement by L. D. Barney, president of the firm.

Dr. Lowell O. Randall of the department of pharmacology has been promoted to director of pharmacology, and Dr. S. Evert Svenson of the department of clinical research has been promoted to director of medical information.

Dr. Elmer L. Severinghaus, associated with the company since 1946 as director of clinical research, and vice-president for clinical research since 1954, has retired.

Carter, Cummings Sales V. P.

David C. Thackray has been appointed vice-president in charge of sales of Carter, Cummings & Co., Ltd.

At the centennial banquet of E. R. Squibb & Sons, held recently at New York City's Waldorf-Astoria Hotel, J. C. Leppart, senior vice-president of Olin Mathieson Chemical Corporation and chief executive officer of Squibb, makes the first cut in Squibb's 100th anniversary cake.

Gen. Mgr. of Bristol Labs

James D. McNitt has been appointed vice-president and general manager of Bristol Laboratories, according to Dr. Philip I. Bowman, president of the company. In his new post Mr. McNitt will have charge of all Bristol Laboratories operations in Syracuse, N. Y.

Mr. McNitt joined Bristol in 1944 as senior chemical engineer. Since that time he has successively held the offices of director of chemical engineering, assistant to the plant manager, plant manager and vice-president in charge of manufacturing.

Before joining Bristol he was assistant professor at Massachusetts Institute of Technology and director of the Bangor Station, M.I.T. School of Chemical Engineering.

Honored for her contributions to the Lady-in-Waiting, Mrs. Catherine Mennen, educational director of Mennen Baby Products, receives the My Baby Magazine award from Willard Crane, president of Shaw Publishing Company, publishers of My Baby and Congratulations magazines. Looking on is Dr. Bela Schick, discoverer of the Schick Test.

Indianapolis "Man of Year"

Frederic M. Hadley, executive vice-president of Eli Lilly and Company, who served as co-chairman of a campaign which recently raised almost $4 million in Marion County's first United Fund drive, has been named Indianapolis's 1957 "Man of the Year" by the Indianapolis Times.

Mr. Hadley is the second representative of Eli Lilly and Company to be named "Man of the Year" since the Times initiated the title three years ago. The first was Eugene N. Beesley, Lilly president, who was chosen for the 1955 honor in recognition of "his company's outstanding contribution to the most spectacular medical development of the generation" (polio vaccine).

Purdue Frederick (Canada) V. P.

James St. Clair Moffat has been

JAMES ST. CLAIR MOFFAT

appointed vice-president and general manager of The Purdue Frederick Co. (Canada) Ltd. Montreal.

Mr. St. Clair Moffat was most recently vice-president of sales and marketing for Mead Johnson of Canada, Ltd. Previously he was Ontario sales manager for Calvert Distillers Ltd., and from 1948 to 1952 was sales manager for E. R. Squibb of Canada, Ltd.

Organon Promotes Four

Dr. Reynold C. Merrill, formerly assistant medical director of Organon, Inc., has been appointed medical director. Harold Breslow, formerly assistant director of production, has been named production manager. Irwin M. Lerner, formerly medical copywriter, has been appointed assistant advertising manager. Thomas R. McGovern has been named sales correspondent.

ROBERT G. URBAN

J. S. HEWITT

Warner-Lambert Forms Family Products Division

Formation of Family Products Division, which will consolidate all phases of the marketing operations of Warner-Lambert Pharmaceutical Company's proprietary drug, cosmetic and toiletry lines, has been announced by Alfred E. Driscoll, president of the firm.

Appointed president of the new division is J. S. (Jack) Hewitt, who has been president of the Anahist Company, a unit of Warner-Lambert.

Mr. Driscoll explained that the Family Products Division represents a consolidation of the marketing activities of several heretofore separately operated divisions of Warner-Lambert. He noted that in the last three years the company had undergone a series of mergers, starting with the merger between Warner-Hudnut and the Lambert Pharmacal Company in May, 1955, followed by that with the Emerson Drug Company later the same year and, in 1957, with the Nepera Chemical Company.

Executive appointments for the Family Products Division are:

Robert G. Urban, executive vice-president and general manager of the Hudnut-DuBarry lines; Irvin W. Hoff, vice-president and director of advertising for the entire division; Frank Camp, vice-president and general manager of sales for all product lines, with the exception of DuBarry products; William Strawson vice-president and general manager for the Emerson Drug products, which include Bromo-Seltzer and Fizzies; Gerald S. Fowler, vice-president and director of marketing for the DuBarry line; Matt F. Ruffle, director of marketing for the Richard Hudnut toiletries; Robert MacFarlane, manager of marketing for Brown, manager of trade promotion for all Anahist products.

all Anahist products, and Joe

Mr. Hewitt, in addition to his new post as president of the division, will retain his title as general manager of the Anahist products line.

Information Exchange

A. Boake, Roberts & Co. Ltd., London E.15, have announced that the firm's product development manager, Peter P. Hopf, will be in the United States April 9 to 30 to exchange with chemical manufacturers and users technical and commercial information.

Vice-Pres. of Sonneborn

Dr. Erich Meyer has been appointed vice-president or L. Sonneborn Sons, Inc. Formerly director of the department of industrial research, he will continue to head that department, acting as liaison officer among research, manufacturing, and sales activities.

Baxter Plant in Puerto Rico

Baxter Laboratories, Inc. has established a new plant at Rio Piedras, Puerto Rico. William B. Graham, president of Baxter, has said that "Puerto Rico's strategic location will help us provide better service to our customers in an area where demand is on the increase."

The new Baxter affiliate has started production of expendable administration equipment. Production of a full line of intravenous solutions, blood bottles and other equipment for blood collection and transfusion will begin in the new plant as soon as equipment installation is complete. Mr. Graham forecasts first year sales of nearly $1,000,000.

ADACIOM Election

The Associated Drug and Chemical Industries of Missouri, Inc. has elected the following:

President, E. Ted Mann, The Dow Chemical Company; first vice-president, Leo G. Peck, Peck's Products Company; second vice-president, Robert F. Walsh, Harry A. Baumstark & Company; third vice-president, Robertson E. Clark, Mallinckrodt Chemical Works; secretary, S. C. Gansner, Cole Chemical Company; treasurer, J. Louis Lanz, Albert Verley & Company.

Members of the executive committee elected were: E. E. Aldrich, Rexall Drug Company; George W. Barth, Owens-Illinois Glass Company; William Carpenter, Columbia-Southern Chemical Corp.; W. D. Vesey, Merck & Co., Inc.; Joseph C. Weiler, J. C. Weiler & Co., Inc.; Phil Yates, Marvin Yates Company.

Officers and directors, past and present, of the Adaciom Club: rear row, left to right, O. W. Rash, Carling Brewery; P. A. Hein, Mallinckrodt Chemical Works; Phil Yates, Marvin Yates Co.; William Carpenter, Columbia Southern Chemical Corp.; G. F. Pauley, Monsanto Chemical Co.; G. H. O'Neal, The Dow Chemical Company; G. W. Barth, Owens-Illinois Glass Co.; Morton Meyer, Thompson Hayward Chemical Co.; front row, left to right, Charles Fox, Aluminum Company of America; William Vessey, Merck & Co., Inc.; Joseph C. Weiler, J. C. Weiler & Co., Inc.; J. Wise, Grove Laboratories; Marvin Yates, Marvin Yates Company; E. E. Aldrich, Rexall Drug Co.; E. T. Mann, The Dow Chemical Company; Leo G. Peck, Peck's Products Co.; Starling G. Gensner, Cole Chemical Co.; R. F. Walsh, Harry A. Baumstark & Co.; R. B. Clark, Mallinckrodt Chemical Works.

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TELFORD A. WAMSTAD

Mead Johnson Exec. V.P.

Robert E. Sessions, marketing and business administrator authority and co-founder of the Philadelphia management consulting firm of Alderson & Sessions, has been appointed executive vice-president of Mead Johnson & Company, a newly created post and the second Mead Johnson executive vice-presidency, according to D. Mead Johnson, president of the firm.

Mr. Sessions, 48, will join Harold O. McCutchan, executive vice-president since 1955, as one of the two top general administrative officers of the company directly under the president. Both men will have authority to act for the president in his absence, in the order of their seniority.

Divisions and staff functions which will report to Mr. Sessions are the Nutritional and Pharmaceutical Products Division, Mead Johnson International, Parenteral Products Division, Pablum Products Division, and the Design and Distribution Departments. In addition, he will be functionally responsible for the activities of Mead Johnson of Canada, Ltd.

Mr. Sessions formed the consulting firm with Wroe Alderson in 1945 after both men had served in wartime Washington with the Office of Price Administration. Mr. Sessions was deputy assistant administrator of the OPA and also a consultant to the Foreign Economic Administration and the Federal Bureau of the Budget during that period.

Prior to that he served consecutively as attorney, assistant to the chairman of the board and assistant general manager of the Tennessee Valley Authority.

Transferred by Mallinckrodt

Telford A. Wamstad, Mallinckrodt sales representative in the Minneapolis area since 1949, is being transferred to the regional sales office in Chicago to assist the Chicago regional sales manager, E. Richard Kuehne. The Chicago region includes Northern Illinois, Minnesota, Eastern Wisconsin, Iowa, Northwestern Indiana, and North and South Dakota.

The Minneapolis territory, which includes Minnesota and North and South Dakota, will be taken over by C. Sherwood Kettler. Since joining Mallinckrodt in 1954, Mr. Kettler has been assigned to the reagent sales division in St. Louis.

Bush Joins Chesebrough-Pond's

Fredreick Bush has been appointed plant engineer for the Clinton, Conn., plant of Chesebrough-Pond's Inc., according to Robert C. Fuller, vice-president in charge of manufacturing.

For the past two years Mr. Bush has been engineering manager for the J. B. Williams Co. Prior to that time, he had spent eight years as a mill engineer at Johnson & Johnson's surgical adhesives division in New Brunswick, N. J.

Eastco Appoints Shull

Henry A. Shull has been appointed director of advertising and marketing of Eastco, Inc. He was formerly vice-president in charge of new products for Vick Products Division, Vick Chemical Company, and advertising manager of the Pharma-Craft Corporation.

Mitchum E. Warren, right, has been elected president of Golden Peacock, Inc., succeeding his father, Will T. Warren Jr., left, president of the company 38 years, who has been named chairman of the board.

C. SHERWOOD KETTLER

Promoted by Bristol Labs

Floyd M. Knowlton has been promoted to manager of chemical development and Dr. Bernard Chertow to head of the chemical development pilot plant according to S. H. Sadoff, newly appointed director of technical services at Bristol Laboratories.

Joining Bristol in 1945, Mr. Knowlton was made assistant department head of the chemical development pilot plant in 1950, and a year later was promoted to head that plant.

Dr. Chertow joined Bristol in 1949, and in 1952 was made project engineer in the chemical development pilot plant which he now heads.

Ethicon Research Vice-Pres.

Dr. Walton Van Winkle Jr. has been elected vice-president in charge of research of Ethicon, Inc. A. J. Bee, president, has announced. Dr. Van Winkle has been director of Ethicon's Research Division since the unit started on a wide program of expansion in 1951. Mr. Bee also announced the appointment of Dr. Joseph Nichols as associate director of research.

Dr. Van Winkle has served with the U.S. Food and Drug Administration as pharmacologist and assistant chief. Dr. Nichols joined Ethicon in 1951 as head of the organic chemistry department. Prior to this, he did research work at Zurich, Switzerland, for two years.

Perrigo Co. Expanding

L. Perrigo Company recently completed a new fine chemical plant for custom organic synthesis at Allegan, Mich. Dr. L. C. Curlin will be in charge of research development and production.

G. WESLEY JOITHE

Sun Chemical Vice-Pres.

Eric N. Blackstead has been elected vice-president of Sun Chemical Corporation and general manager of its chemicals group. Prior to his election as a vice president of Sun, Mr. Blackstead was vice-president and general manager of Ansbacher-Siegle.

Frost Is A.N.A. Treas.

Donald S. Frost, vice-president in charge of advertising, Bristol-Myers Products Division, Bristol-Myers Company, has been elected treasurer of the Association of National Advertisers by the A.N.A. board of directors. He succeeds Henry Schachte, vice-president, Lever Brothers Company who was elected vice-chairman of the Association at its annual meeting last October.

Trotter Buys Allied Asphalt

Allied Asphalt & Mineral Corporation, compounder of pitches, plasticizers, gilsonite and tailor-made waxes, has been acquired by the E. T. Trotter Company, manufacturer of products for the electrical wire and cable industry, according to an announcement by George J. O'Sullivan, vice-president and general manager of Allied Asphalt.

The Trotter manufacturing facilities, now in Brooklyn, will be transferred to the modern Allied Asphalt and Mineral Corporation's plant in Dunellen, N. J. All operational, technical and management personnel of Allied Asphalt will be retained, said Mr. O'Sullivan, who will continue as vice-president.

Luff Heads Mich. Assn.

Wayne E. Luff of Mallinckrodt Chemical Works has been elected president of the Chemical and Allied Industries Association of Michigan.

Reheis Appointments

G. Wesley Joithe and Ernst H. Kastning have been appointed treasurer and technical director respectively of the Reheis Company, Daniel H. Reheis, president and founder of the company, has announced.

The move is part of the company's current expansion program aimed at diversifying the Reheis line by developing new products. Mr. Reheis said that his executive assistant, John E. Garizio, will direct all sales under the program.

Before assuming his new duties, Mr. Kastning was in charge of chemical manufacturing operations for Warner-Chilcott Laboratories, which recently merged with Nepera.

Mr. Joithe joins Reheis with 20 years experience in the pharmaceutical industry at the executive level, handling production and finance.

Maltbie Labs Appoints

James M. Douglas has been appointed director of technical services for Maltbie Laboratories Division, Wallace & Tiernan, Inc. He was previously a research associate in the medical department of Smith, Kline & French Laboratories, and a biologist in the viral and rickettsial research department of Lederle Laboratories.

Ansbacher-Siegle Gen. Mgr.

The appointment of Frank May as general manager of Ansbacher-Siegle Corporation, a recently acquired division of the Sun Chemical Corporation, has been announced by Norman E. Alexander, Sun's president. Mr. May replaces Eric Blackstead who was recently elected a vice-president of the Sun Chemical Corporation and general manager of its chemicals group.

FRANK MAY

ERNST H. KASTNING

Eastman Chemical Election

Advancement of three officers and the election of two new vice-presidents by the board of directors of Eastman Chemical Products, Inc. a subsidiary of Eastman Kodak Company, have been announced by James C. White, board chairman, and William S. Vaughn, president.

Spencer E. Palmer, a vice-president, has become first vice-president; R. S. Leonard, comptroller, has assumed the duties of assistant vice-president; R. L. Flanary, assistant comptroller, has become comptroller.

The new officers are Dr. James E. Magoffin and David C. Williams, who were elected vice-presidents.

Dr. Magoffin will be in charge of the chemicals division of Eastman Chemical Products, Inc., succeeding Henry L. Ford, who has been elected a vice-president of Tennessee Eastman Company, another Eastman Kodak subsidiary. Mr. Williams will head the plastics division, now under the direction of Mr. Palmer.

Schering Promotes Babits

John J. Babits, formerly assistant general accounting manager for Schering Corporation, has been appointed general accounting manager, according to John J. Goepfert, controller of the company.

Rhys M. Jones

Rhys M. Jones public relations representative for Abbott Laboratories and former newspaperman, died Jan. 11 after an extended illness.

Edward Zink

Edward Zink, retired sales manager of Eli Lilly and Company, died January 17 at the age of 80.

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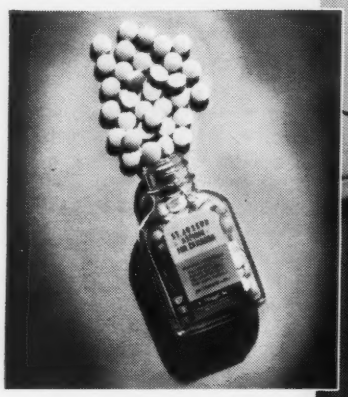
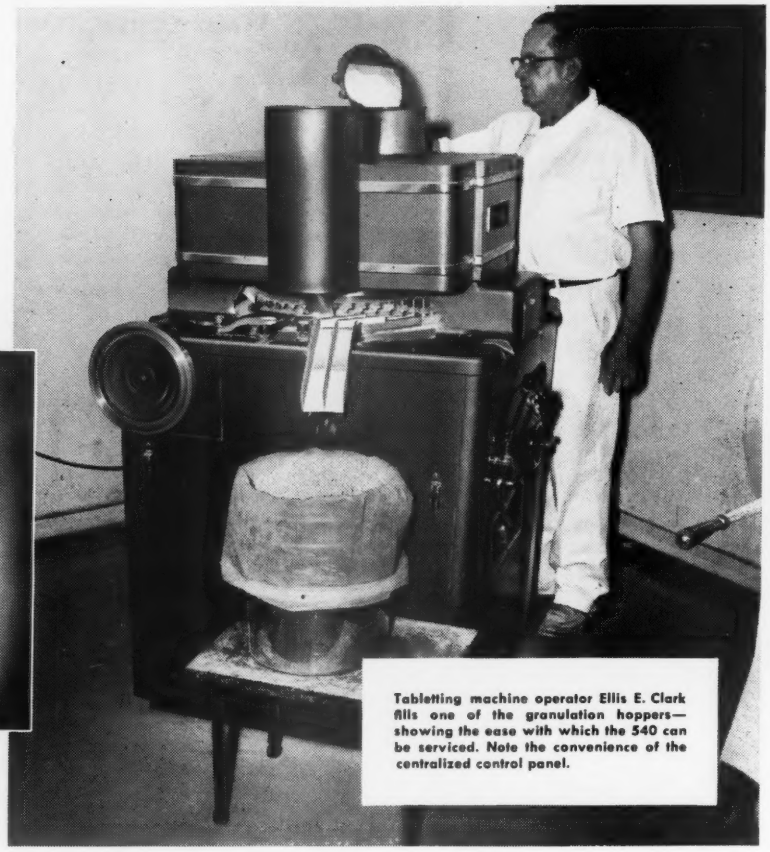




Tabletting machine operator Ellis E. Clark fills one of the granulation hoppers—showing the ease with which the 540 can be serviced. Note the convenience of the centralized control panel.

Plough, Inc. cuts tabletting costs with Stokes Model 540 Rotaries

Plough, Inc., Memphis, Tennessee, is operating two Stokes Model 540 Rotary Tabletting Machines for production of St. Joseph Aspirin For Children.

According to Mr. Hugh F. Crawford, Production Control Manager, "these presses are completely satisfactory because of the production of a tablet that is uniform in weight and hardness. The use of these presses has resulted in a savings of 20% on our cost of tabletting." The Model 540's can operate at the highest speed attainable with the type of granulation being used, resulting in continuous high-speed production of highest quality tablets.

The Stokes Model 540 is advanced design in every respect. It's the easiest machine to set up and adjust that has ever been developed for tabletting. All controls and adjustments are readily accessible on a single panel. Pressure adjustment is made hydraulically by push button control.

The 540 requires little floor space. It is built for long life, long tool service, with centralized pressure lubrication and safety overload protection. It runs so smoothly that no special foundation or permanent mounting is needed.

Find out how the new Stokes Rotary Tabletting machines can save on your own production. Write or call your nearest Stokes office.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

Management Forum

By FRANCIS CHILSON
INDUSTRIAL CONSULTANT

Management Training

A lot of rubbish is published about post-college management training and millions of dollars are spent annually in the hope of making silk purses out of sows' ears. It is certainly true that native talents can be developed and polished by training, especially college training. But to become a good executive one must be born with some brains, imagination, initiative, an innate desire for leadership and an instinctive eagerness to accept responsibility. All the job training in the world will not supply those basic qualities. Few people are born so lucky, and, since the need for administrative ability far exceeds the supply, it is necessary to train people to help share the burdens of management in some of its phases.

Many of the traits that count most in management can be seen in childhood—even in babyhood. It is an old adage that the pup that leaves the litter first makes the best dog. We use all sorts of aptitude tests and we make fullest use of school records in our endeavors to select those best qualified for further executive training. But the trouble is that the records do not go back far enough. If we could get some sort of idea what sort of child a person was and could follow his development through all his school years we'd be able to make better selections for advanced training.

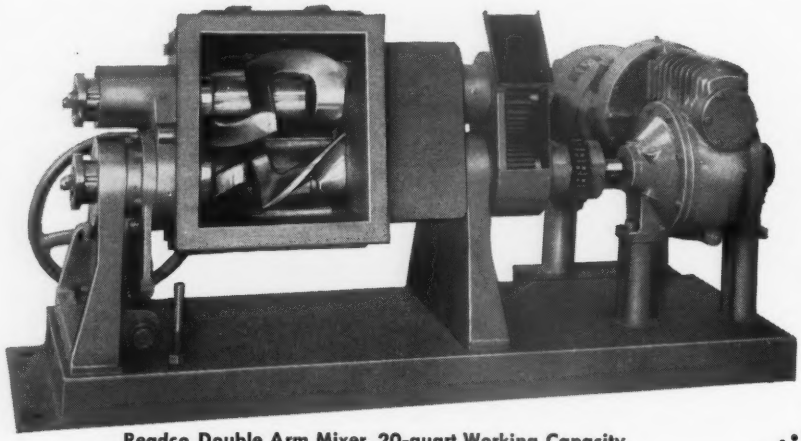
In addition to the problem of selecting the ablest candidates for advanced training, we later on have the problem of frustration when the young executive comes back from a training course, filled with ideas—ideas which in many cases are too general to be worth a damn. In any event the young executive is confronted with the problem of selling his ideas to his boss, who may or may not have been consulted when the lad was sent off to the management training school. His boss may be resentful because he wasn't sent himself; he may regard the whole idea as bloody nonsense (after all he got along without it himself!); he may feel that the young upstart is making a pitch for his job. So the young lad, coming back from a training course full of notions as to how to revolutionize his job, finds himself batting his head against a stone wall. Having limited authority and no recourse over his boss's head, he finds himself completely frustrated. If he is really good he quits; if he isn't he subsides back into the old rut. When, however, the young man's boss is a very unusual person he lends a sympathetic ear to the suggestions made and endeavors to help the young executive in every possible.

Several management engineers have established (and got rich thereby) summer camps where they profess to teach motion study, work simplification, foreman training, organization and management methods and also a lot of fal de ral. Since the students come from any company in any industry that can afford from three to six thousand dollars per man for a six or eight weeks intensive course, it follows necessarily that the courses must be based upon very general principles—so general that many if not most of the candidates get nothing out of the course at all.

Universities have established intensive courses not only for young executives but for old one's as well. So many such courses have been established that it has become another expensive management fad to support them. And we Americans love fads—and the more expensive the better!

Fortune made a national survey on the subject as did Time. I quote from Time's January 6th issue:

"Despite the time, money and effort that go into formal management training, some companies consider the whole thing a monumental waste of time. They feel, like Douglas Aircraft, that without any help from training schools, "the cream will come to the top and the skimmed milk will stay at the bottom." The management-training-school graduate, they point out, often faces a flock of frustrations on



Readco Double Arm Mixer, 20-quart Working Capacity

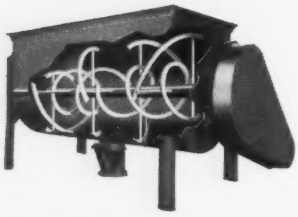
Predict production precisely with READCO Lab and Pilot Plant Mixers

READCO

Incorporating all the basic design features of larger production models, Readco Laboratory and Pilot Plant mixers enable you to make accurate forecasts for commercial processing.

Mixing bowls are accurately machined and fitted . . . have vacuum covers and temperature controlling jackets. Overlapping sigma mixing arms are held in constant close clearance, eliminate dead spots, prevent build-up of materials, aid temperature control. Easily interchangeable mixing arms adapt to various materials or processes.

Ruggedly built of Type 316 stainless steel, or any commercial alloy, Readco lab and pilot plant mixers will efficiently handle even heavy viscous material. They are available from stock in 1, 3, 6, 20 and 40-quart working capacities, with fixed or variable speed drives. For more information see Chemical Engineering Catalog, pages 1483-1490 . . . or write direct.



Readco Spiral Ribbon Mixers—Batch or Continuous. Standard sizes 1 to 500 cu. ft. working capacities.

Readco Vertical Mixers, planetary action, multiple speed, 12 to 175 qt. working capacities. (Model K-20 illustrated)

Whatever the mixing job . . . a READCO mixer!

READ STANDARD

York, Pennsylvania

A Division of
Capitol Products Corporation

his return to work. "Lots of men feel that being sent to college is like being told they're going to be vice president," says one executive. "When it doesn't happen to them, they're disappointed." Others sulk if management does not readily accept their new ideas. Moreover, some companies suspect that the popularity of executive training, especially at universities, does not grow from corporate need at all, but is merely a long-delayed reaction to the idea that the average businessman is just an uncultured boob.

Perhaps the biggest objection to the whole idea of executive training courses is that U.S. industry, which spends millions checking on the efficiency of everything else it does, has no check on the results of executive training. More important, it has not even been able to figure out a way to do so effectively. The biggest reason for this failure is that, as Ralph M. Besse, executive vice president of Cleveland Electric Illuminating Co., puts it, "Those picked to attend classes have already demonstrated ability to move, so you can't say their class work was the specific cause of any advancement." When asked point-blank what they got out of such courses, the executive students themselves seem surprised by the question and are often at a loss for an answer. They mumble such replies, as, "Well, it wasn't a waste of time" or "I guess it did some good." Even those who are most enthusiastic about the courses describe the benefits they got as "intangible" rather than anything that could specifically help them in business. Says a Jones & Laughlin Steel Corp. official: "You have to have faith that they do some good, that's all—absolute faith."

In the long run, most companies agree that executives cannot be produced in the class room. They accept the fact that the natural qualities that make a good executive usually come to the fore whether or not a man is exposed to formal training. What they hope to accomplish by switching their men for a time from the executive suite to the classroom is to sharpen their talents with broadening work for which there is little time in the busy world of business. Says Jerry Basseler, director of Continental Oil's Personnel Development: "We simply think of additional education as an opportunity the company affords a man. If anything comes of it, that's fine. But the proof of the pudding still rests with the man."

What's the answer to all this? We need better administrators; we need a continuing supply of them. We recognize that while pre-job college training is essential and helpful, additional advanced training is necessary. If management engineering "camps" and the universities cannot adequately meet the need how is it to be met? My own answer is industry by industry.

The associations should conduct their own schools. In a sense conventions do supply some education but it is not enough and it is not co-ordinated or even coherent. We should have a school of pharmaceutical management and one in cosmetic management. While it is true that the broad principles of economics and management apply to every industry, it is equally true that men understand them better when they are couched in the idiom of their own industry.

Cheer Up

Donald I. Rogers, financial editor of the New York Herald Tribune, predicted on January 2, 1958 that this would be a very good business year basing his prediction on the following economic guesses:—

The Gross National Product, already up from $415 billion to $435 billion in a year, in 1958 will exceed $441 billion.

The economy has already undergone its feared-for "recession," which is now approaching its end; mid-year will see a decided turn-up.

Disposable income will increase from $300 billion to $308 billion—so there ought to be plenty of money to buy goods.

Spending by consumers will increase from $281 billion to a level of $289 billion.

The prospect of getting inflation into a controllable area gives hope that the $8 billion of additional income will be "real" money instead of dollars cheapened by constant price rises.

Easier credit will stimulate that all-important segment of the economy, plant expansion, now at a $38 billion figure (up $700 million for the year). It also should end the housing slump, which saw new starts break the 1,000,000 line for the first time since World War II ended. Rogers expects total construction to rise from $47.2 billion in 1957 to $49.6 billion this year.

Retail sales will top $200 billion, an all-time record and an increase for the year of $4 billion.

A new peak in the number and value of dividends paid to shareholders despite a pinch on profits.

A record year by corporations in such widely diversified industries as chemicals, electronics, rubber, machine tools and textiles.

A long-overdue upturn in apparel sales.

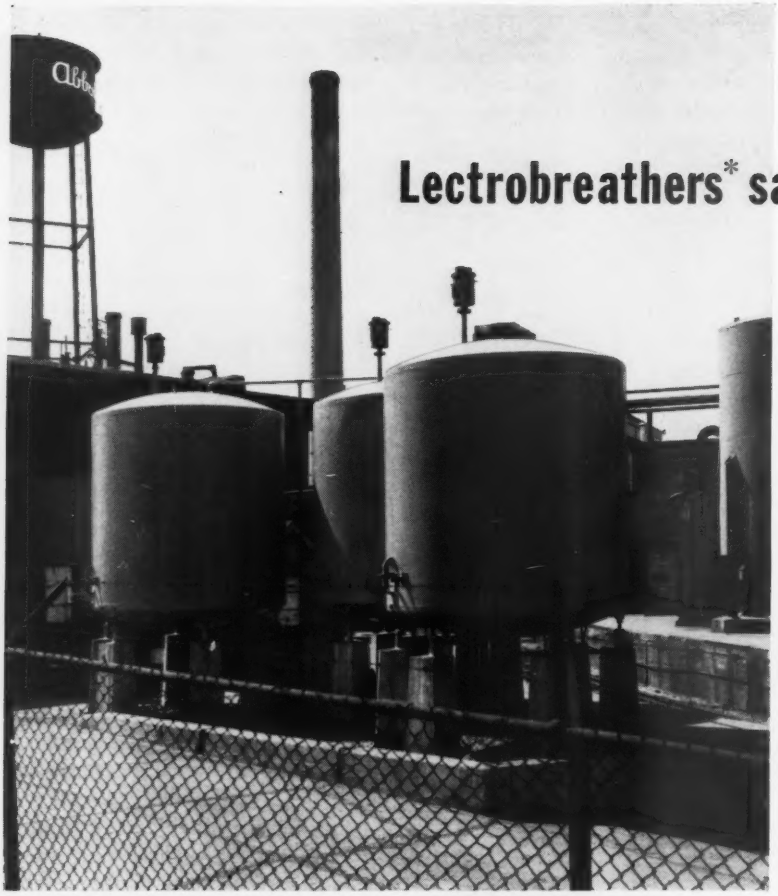
A marked pick-up in sales of appliances and home furniture and furnishings.

A more stable market for metals, particularly copper, the rocky performer of 1957.

Thinkers vs Teamworkers

"Thought and art are the products, not of a powerful working force, a mass of men working together, but of separate individuals going their own different ways. *People like that will never be dependably efficient.* Even in their best days the Greeks could never make a Greek empire. They did not really like working together; they wanted freedom to do as each one pleased. But to the Romans union was strength, and that was what mattered. Mind and spirit—they were fairly negligible. What was important was the will. When Christ said, "Seek and ye shall find,"

Lectrobreathers* safeguard chemicals in storage—permitting carload purchases

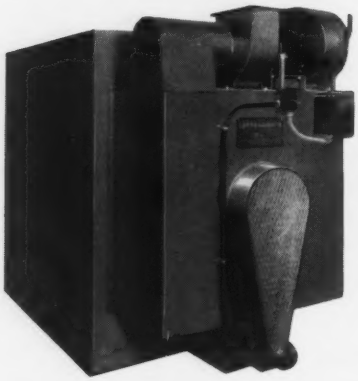


You see Lectrobreathers extending above tanks and rooftops at the Abbott Laboratories plant in North Chicago, Illinois.

● Buying liquids in tank car lots saves money. But profits are quickly washed out if storage tanks are allowed to inhale wet air as they breathe, contaminating their contents.

Abbott Laboratories solved this problem by installing Lectrobreathers on many of their outdoor and indoor storage tanks. Now, as pressures vary and those tanks draw in outside air, that air is DRY. The original high quality of their contents is preserved.

Lectrobreathers and Lectrodryers make certain that any tank, little or big, breathes only DRY air. For help in selecting the equipment you need, write Pittsburgh Lectrodryer Division, McGraw-Edison Company, 309 32nd Street, Pittsburgh 30, Pennsylvania.



Where volumes of air are large, as in a tank farm, a Lectrodryer serves as a breather. Its DRYing-reactivation cycle is continual, so it stays right on the job.*

◀ *A tank breathes freely as air passes through the Activated Alumina adsorbent and is dried DRY. When a Lectrobreather needs reactivation, it is lifted off and a spare takes its place.*

McGRAW EDISON

Lectrodryer

*REGISTERED TRADEMARK U. S. PAT. OFF.

and "Ye shall know the truth and the truth shall set ye free," He said what was easy for a Greek to understand, but very hard for a Roman. *The Romans were wonderful organizers, and an organization is not a place where people are encouraged to seek or to be free.*" Edith Hamilton in *The Echo of Greece.*

Legal Communication

(From Kaminiski v. Grand Trunk W. R. Co., 347 Mich 417 as quoted in the New Yorker.)

"It is thus right to say that the trial judge's immediate duty, motion for direction having been made with address to the rule of conjectural choice between equally plausible inferences, is to determine on favorable view of the inference plaintiff relies upon whether it stands equiponderant at best with such as is, or are, urged by the defendant."

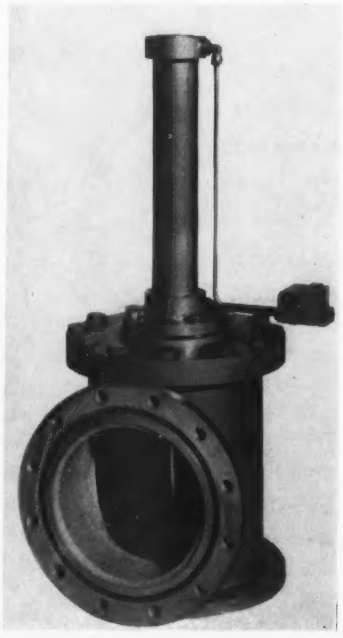
Stokes' New Poppet Valves

A new series of right angle poppet type high vacuum valves, Model 217, has been developed by the Vacuum Equipment Division of F. J. Stokes Corporation, Philadelphia.

The new Stokes poppet valves have quick-acting positive air cylinders, and are ideally suited for low-pressure applications in the micron range. The fully opening valve design provides maximum conductance.

Each valve is helium leak-tested to assure absolute vacuum tightness. The disc and body are corrosion-resistant plated to withstand severe service. The valve actuating stem is chrome plated for long life without shaft or seal scoring. The flange connections of all valve sizes are standard fittings.

Four-way manual control valves for the air cylinders are available as are four-way solenoid control valves for remote operation.



The new Model 217 series of valves is available from stock in 4", 6", 10", and 16" sizes; larger sizes up to 36" can be built to order.

The valves are described in Stokes Data Sheet 570 which is available free on request from Vacuum Equipment Division, F. J. Stokes Corporation, 5500 Tabor Road, Philadelphia 20, Pa.

One Half Micro Milling

Sturtevant Mill Company, Boston, Massachusetts, announces the successful fine grinding of particles to a half-micron (1/100th the diameter of average human hair) in modified Sturtevant Micronizers, fluid energy mills with no moving parts.

Making this theoretical reduction a reality marks the second major step in a few months in Sturtevant's accelerated attempt to perfect methods of fine grinding. The first was the start-up of a fluid energy grinding pilot plant in April 1957 for experimentation and custom grinding.

The announcement was made by Sturtevant's new board chairman, William T. Doyle, who called the achievement "extremely important. Behavior efficiency in dispersions and blends can be made considerably more effective through micron-size particles." Doyle, who pioneered the fine grinding plant while he was president of the company said, "The variety of materials that can be reduced to submicroscopic sizes is growing every day. New materials constantly are being tested and work is in progress to adapt the Micronizer to handle extremely hard and abrasive materials."

The Micronizers in which the testing took place operate on the principle of super-speed rotation of particles produced by jets of compressed air or steam, which causes violent impact of the particles and results in fine pulverization without attritional heat. The major use of Micronizers has continued to be the simultaneous dry grinding and classification of superfine solids to a degree impossible by other commercial machines. Tests have shown that certain materials behave in totally different ways when reduced to particle sizes in the lower micron range.

Material to be processed is introduced into the shallow grinding chamber through an opening near the periphery. Adjustments of feed rate and/or volume or pressure of the grinding fluid maintains product uniformity in the desired size range. While fines are collected and classified at the center of the grinding chamber, certrifugal force created by the high speed jets tends to keep the coarse particles in the grinding zone until they are sufficiently reduced to move inward to the point of discharge.

Eight sizes of Micronizers are manufactured by Sturtevant. The two smallest are 2" and 4" in diameter and are used mainly for laboratory work. The

is *Sterilization* a factor in your Product or Process?

Because much of the initial research on gas (ethylene oxide) sterilization originated at American Sterilizer, growing numbers of AMSCO-developed installations have been serving production and processing industries for more than eight years.

Here, as in the traditional Pressure Steam or Dry Heat methods, the American Sterilizer Company offers the world's largest accumulation of facilities, experience and research data on the broad subject of sterilization.

We have a complete range of techniques and automatically controlled equipment for standard or special installations . . . for laboratory, pilot plant or production application. Experimental and pilot plant facilities are available through our Research Department . . . and engineers of our Scientific Division are "on call" for consultation on such matters as production processes, techniques or packaging materials related to sterilization.

GAS

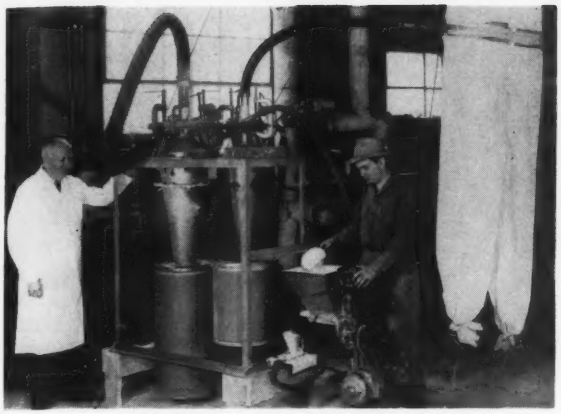
PRESSURE STEAM

DRY HEAT

If any sterilizing process is or should be a factor in your product . . . outline your problem to us. We can help you!

SCIENTIFIC DIVISION

AMERICAN STERILIZER
ERIE • PENNSYLVANIA



Feeding eight-inch Micronizer at Sturtevant pilot plant.

largest model, 36″ in diameter, offers a capacity of from 500 lbs. to more than two tons per hour, depending upon the material and the desired reduction.

TYPICAL GRINDING DATA FOR VARIOUS MATERIALS PROCESSED IN THE STURTEVANT MICRONIZER

Material	Mill Diameter	Grinding Type	Medium Flow	Solid Feed Rate	Approx. Avg. Particle Size
Titanium Dioxide	30″	Steam	4000 lbs./hr.	2250 lbs./hr.	½u
Sulphur	24″	Air	1000 lbs./hr.	1300 lbs./hr.	3-4u
Talc (Varies	30″	Steam	4000 lbs./hr.	2000 lbs./hr.	2u
Iron Oxide Pigment	30″	Steam	4000 lbs./hr.	1000 lbs./hr.	2-3u
Cryolite	30″	Steam	4000 lbs./hr.	1000 lbs./hr.	3u
Barytes	30″	Steam	4000 lbs./hr.	1800 lbs./hr.	3-4u
Fuller's Earth	20″	Steam	1200 lbs./hr.	600 lbs./hr.	3-4u 15u top
Anthracite Coal	20″	Air	1000 c.f.m.	1000 lbs./hr.	5-6u
DDT (50%)	24″	Air	1000 c.f.m.	1100 lbs./hr.	5-6u
Procaine-Penicillin	8″	Air	100 c.f.m.	20 lbs./hr.	5u 20u top

Air—100 lbs. pressure—60° F.
Steam—150 lbs. pressure—550° F. total temp.

Palletless Handling In Cosmetic Plant

Palletless handling is a technique that has been applied to industrial situations only in rare instances. Even where attempted, it has been used primarily in the warehousing function.

But The Realistic Company of Cincinnati has shown, for the first time, that palletless handling can be successfully utilized throughout many plants —with savings in manpower, floor space and pallet costs.

Two Model "J" electrically-powered fork lift trucks, produced by Lewis-Shepard Products, Inc., of Watertown, Mass., provide the palletless handling at The Realistic Company. Each is equipped with a hydraulically-adjustable clamping attachment.

To pick up a load, the operator of either Lewis-Shepard fork lift first straddles the load with the attachment. Next, using a manually-operated pressure regulator valve adjacent to the truck's seat, he sets the clamping pressure at the correct setting for the load he is to handle, preventing any threat of crushing goods. He then clamps the load from another control next to his operating position.

The clamping arms are 30 inches long, and have a clamping range of from 23 to 71 inches. Because of the side-shifter on the trucks, loads do not have to be directly in front of the truck to be picked up. Instead, loads can be picked up or deposited at either side.

This, plus the design of the trucks, enables them to operate in extremely tight places, saving considerable space.

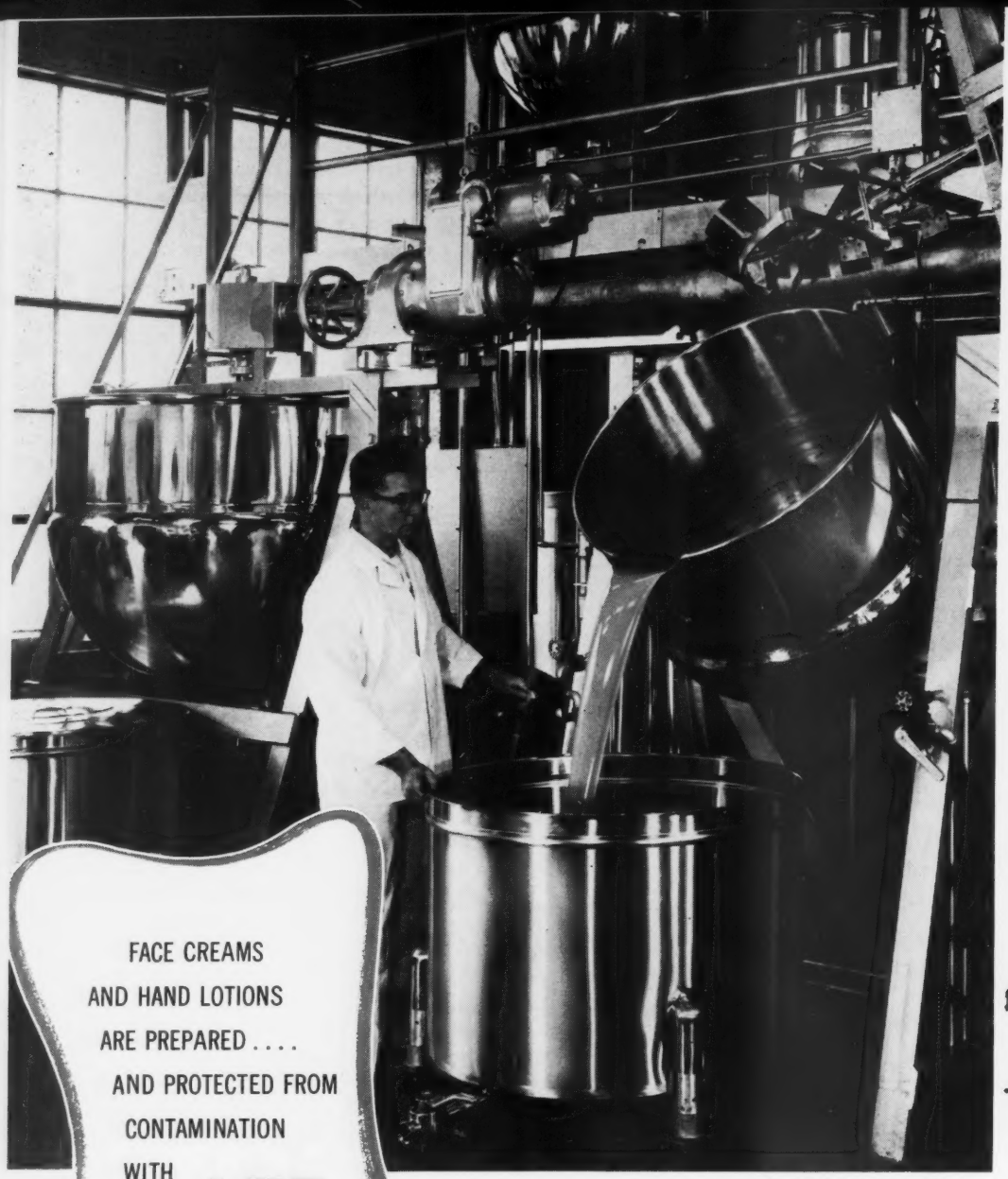
Generally, one of the trucks is assigned to the receiving department. The fork lift enters right in the incoming carriers, both railway freight cars and motor trucks, to pick up its loads. This is possible because of the truck's 71-inch collapsed height, which allows it to pass under ceilings as little as six feet high.

Next, the incoming loads are transported without the aid of pallets to the raw materials storage section. Here, the goods are high stacked to heights of 12-feet by the electrically-powered fork lift.

When materials are needed at the production lines, the non-palletized loads are removed from storage and transported by the Model "J."

The second Lewis-Shepard fork lift is used at the other end of The Realistic Co.'s operation. It takes finished goods from production to storage, and thence to outgoing carriers. Like the other Model "J," this fork lift also can enter trucks and railway boxcars with ceilings as little as 6-feet high.

Besides these assignments, the truck is used for order picking in the finished products storage area,



FACE CREAMS
AND HAND LOTIONS
ARE PREPARED....
AND PROTECTED FROM
CONTAMINATION
WITH

LEE STAINLESS STEEL KETTLES

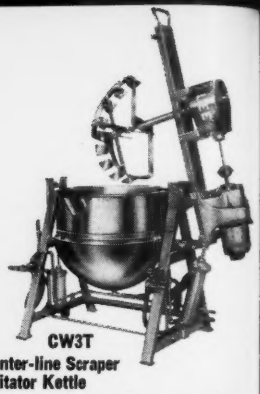
Courtesy of Charles of the Ritz

Assuring high quality control in the production of delicate creams and lotions, these Lee steam-jacketed stainless steel kettles are corrosion-resistant and easy to clean and keep clean.

Complete product mixing is obtained through the use of Lee double-motion center line scraper agitators, whose large stainless steel scraper blades continually move the contents from the heated walls toward the center, keeping an even temperature throughout.

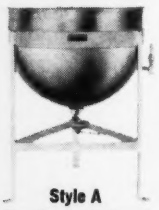
Lee hydraulic operated cylinders—using your present water lines—give perfect control and safety not only in tilting the kettles for pouring and cleaning, but also in raising and lowering the tilting agitators.

Descriptive bulletins for all of our specially-designed processing equipment available on request.

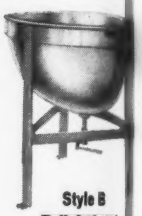


CW3T
Center-line Scraper Agitator Kettle
80 to 300 gal.

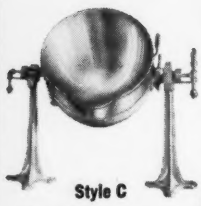
Quick Cooling Pan
50 to 200 gal.



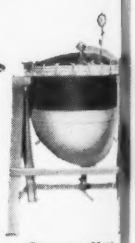
Style A
Two-thirds Jacketed
5 to 500 gal.



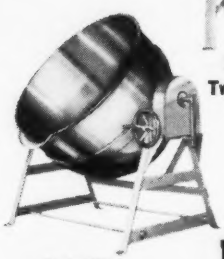
Style B
Full Jacketed
10 to 300 gal.



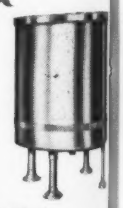
Style C
Two-thirds Jacketed
5 to 100 gal.



Pressure Kettle
Two-thirds Jacketed
40 to 200 gal.

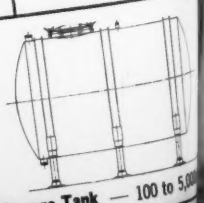


Style CW
Two-thirds Jacketed
80 to 300 gal.



Pulp Tank
500 to 2,000 gal.

Mixing Tank
25 to
500 gal.



Storage Tank — 100 to 5,0

LEE

Technical bulletins fully describing these processing units gladly sent on request.

METAL PRODUCTS CO., INC.

418 PINE STREET, PHILIPSBURG, PA.

Designers and Manufacturers of Corrosion-Resistant Processing Equipment for over 25 years.

as well as handling drums.

What have been the results of this conversion to an electric fork truck-palletless handling system? "Some 160 hours in handling time is saved each week, and we have around 33 per cent more usable floor space," reports W. W. Champion, Vice President in charge of production and purchasing. Previously, hand trucks and skate wheel conveyors were used.

Because of the load clamping attachment, purchase and repair costs for pallets have been wholly eliminated. And, space normally required for storage of pallets has been converted to productive uses.

In use during the plant's full 40-hour work week, the L-S electric fork lifts are "refueled" after each working day at a convenient battery recharging station set up right in the plant. The trucks are then ready for immediate use the next day.

Of course, this lack of combustible fuels one of the reasons electric trucks were selected. In addition, they were the only type to offer odorless, smokeless operation, prime requirements for situations where trucks are to be operated indoors primarily.

Both Model "J" trucks will maneuver in aisles only 7½ feet wide with 30-inch long loads. Actually, they turn in their length due to the rear-wheel drive feature. And the smooth electric operation allows them to turn and maneuver in tight places without a threat of damage to even the most delicate loads, it is reported.

All things considered, The Realistic Co. figures that the electric trucks have repaid their entire original investment in less than a year because of the savings made possible.

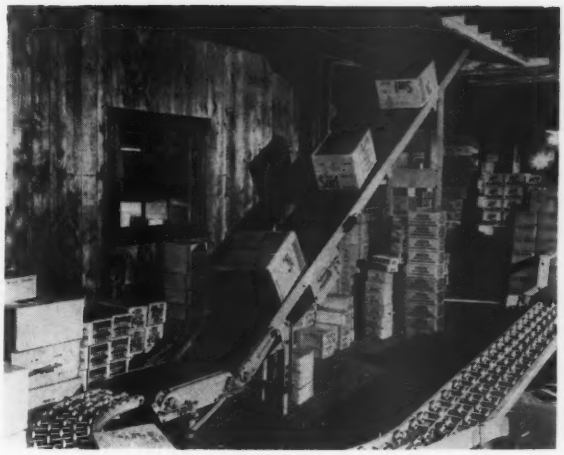
Producer of permanent waves and allied products for use by professional beauticians, The Realistic Company distributes its products throughout the world. The firm has other production facilities in Canada and the Philippines.

It was at its headquarters plant in Cincinnati, however, where it proved the feasibility of palletless handling—not just in a single operation but throughout the entire plant.

New Steep Conveyor Belting

A new cross-corrugated belt, designed for inclined package conveyors and particularly suited for use on steep inclines, has been announced by New York Rubber Corporation, New York City. The ribs in the new "Ridgetop" package conveyor belt are so flexible that they deflect under load and provide a firm nonslip grip on packages moving up inclines at angles of up to 45°.

The high resistance to slippage of "Ridgetop" belting permits shorter flights for conveyors, and helps to save valuable floor space when moving cartons or packages between floors. For inclined conveyors already installed, "Ridgetop" conveyor belts provide more positive transport for packages. In a number



of existing installations this conveyor belting has effectively eliminated slippage on inclined package conveyors previously equipped with other conveyor belting.

The cover compound for "Ridgetop" package conveyor belt is a particularly resilient and tough grade of rubber. It will not harden with age. This construction is also available in neoprene compounds that resist deterioration by oil and grease.

"Ridgetop" conveyor belting is offered in widths up to 48 in. Stocks of the belting are maintained in standard widths of 40 in. and 48 in. for prompt delivery of these and narrower widths. This type of construction is normally made of 28 or 32 oz. cotton duck with an overall cross-corrugated top cover thickness of ⅛ in. minimum and a friction-surfaced back. Variations in construction to meet special requirements are available in orders for reasonable quantities.

Columbia College Tablet Coating Research

In our December issue, the note announcing the acquisition by Columbia University College of Pharmacy of the F. J. Stokes and the Manesty Dry Cota compresssion coating tablet machines included a typographical error which altered the meaning of the statement. The corrected statement should read "Investigations into the development of new uses and research that will aid in the improvement of the process of press coating will *now* be a major part of the graduate research in manufacturing at the school."

Small Scale Nitrogen Aerosol Fill

Builder's Sheet Metal Works, Inc. of 108 Wooster St., New York, is offering an inert gas filling system for packaging thick-flow materials in pressurized cans. The laboratory unit will fill approximately 10 packages per minute and will permit evaluation of experimental products made up with compressed nitrogen. The cost of the complete unit is low.

Poly-Unsaturated Fatty Alcohols

Why Pharmaceutical and Cosmetic Men Think These New Chemicals Often May Be Superior To Essential Unsaturated Fatty Acids

● Most pharmaceutical and cosmetic men are familiar with the essential unsaturated fatty acids . . . and have had reason to fret about certain shortcomings in these products.

Now there is a way to work with the molecular configuration of these acids but gain greater product stability, more resistance to rancidity, easier handling, and better emulsification properties. You do it with ADM's line of poly-unsaturated fatty alcohols, tradenamed "Unadols".

The Unadols are based on linoleyl, arachidonyl, and linolenyl unsaturated alcohols. Considered digestible and non-toxic, they offer ways to formulate pharmaceutical, cosmetic, and nutritional products which are an improvement over those made from the corresponding free fatty acids. Through digestion they are converted to the acids before utilization.

Unadols should add shelf life, palatability, emulsion stability, neutral pH characteristics, and other benefits to many formulations. By protecting the essential unsaturation through conversion to alcohols, the tendency to rancidity is reduced. (Unsaturated fatty acids themselves usually become rancid in a relatively short time.)

A limited number of people have worked with Unadols and like them for possible uses in pharmaceutical and cosmetic preparations. Frankly, though, not enough work has been done along this line. So about all ADM can do at this point is to tell you what is known about the pharmaceutical Unadols and show you the specifications (at right). We hope your curiosity and desire for something better will spur you on to write for evaluation samples.

UNADOL 400

Approx. 53% Linoleyl

Acid Value	1.0 Max
Saponification Value	3.0 Max
Iodine Value (unconjugated)	125-145
Acetyl Value	178-190
Hydroxyl Value	205-220
Cloud Point	13-17° C.
Color 5¼" Lovibond	25Y-2.5R Max
Calculated Molecular Weight	261-274
Viscosity SSU/210° F. (av)	35
Specific Gravity 25/25° C. (av)	.8554

UNADOL 900

Approx. 51% Linolenyl

Acid Value	1.0 Max
Saponification Value	3.0 Max
Iodine Value (unconjugated)	190-210
Acetyl Value	178-190
Hydroxyl Value	205-220
Cloud Point	7-10° C.
Color 5¼" Lovibond	25Y-2.5R Max
Calculated Molecular Weight	260-274
Viscosity SSU/210° F. (av)	39
Specific Gravity 25/25° C. (av)	.8640

OTHER ADM PRODUCTS: Linseed, Soybean and Marine Oils, Paint Vehicles, Synthetic and Natural Resins, Vinyl Plasticizers, Fatty Acids and Alcohols, Hydrogenated Glycerides, Foundry Binders, Industrial Cereals, Vegetable Proteins, Wheat Flour, Dehydrated Alfalfa, Livestock, Poultry Feeds, Olefins and Hydrocarbons.

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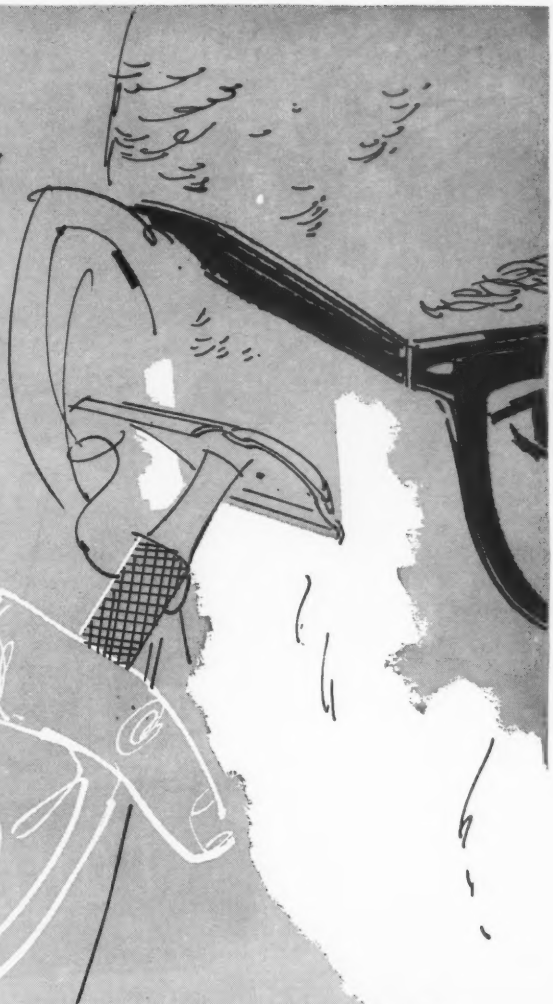
Chemifats **from Nature's Wondrous Warehouse**

you too can profit from stability and uniformity in Stearic Acid

here's how Emersol® 120 keeps shaving cream at top quality at all times...



Case History No. 83-09: "For years, this well-known manufacturer of a popular shaving cream has used Emersol 120 Standard (double-pressed) with very excellent results. However, to keep their foremost position, their research group periodically evaluates competitive stearic acids. The result is always the same...their shaving cream made from Emersol 120 has better odor, requires less processing adjustments and has better keeping ability (extended shelf life). The latter factor means greater resistance to such undesirable changes during aging as rancidity, yellowing, unappealing appearance, and unsatisfactory performance, all of which discourage repeat orders."

This actual experience is only one of the many instances where the use of Emersol 120 results in tangible benefits. These same advantages apply to all products made from stearic acid and are imparted by all grades of Emersol Stearic Acids. And since they cost no more than competitive grades, you have nothing to lose and everything to gain by ordering all your stearic acids from Emery. Call us the next time you are in the market.

Emery **Fatty Acid Sales Department**

Emery Industries, Carew Tower, Cincinnati 2, Ohio

New York; Philadelphia; Lowell, Mass.; Chicago; San Francisco; Cleveland; Ecclestone Chemical Co., Detroit

Warehouse stocks also in St. Louis, Buffalo, Baltimore and Los Angeles

Export: Carew Tower, Cincinnati 2, Ohio
In Canada: Emery Industries (Canada) Ltd., 639 Nelson St., London, Ontario.

Emery Industries, Inc.
Dept. D-2, Carew Tower
Cincinnati 2, Ohio

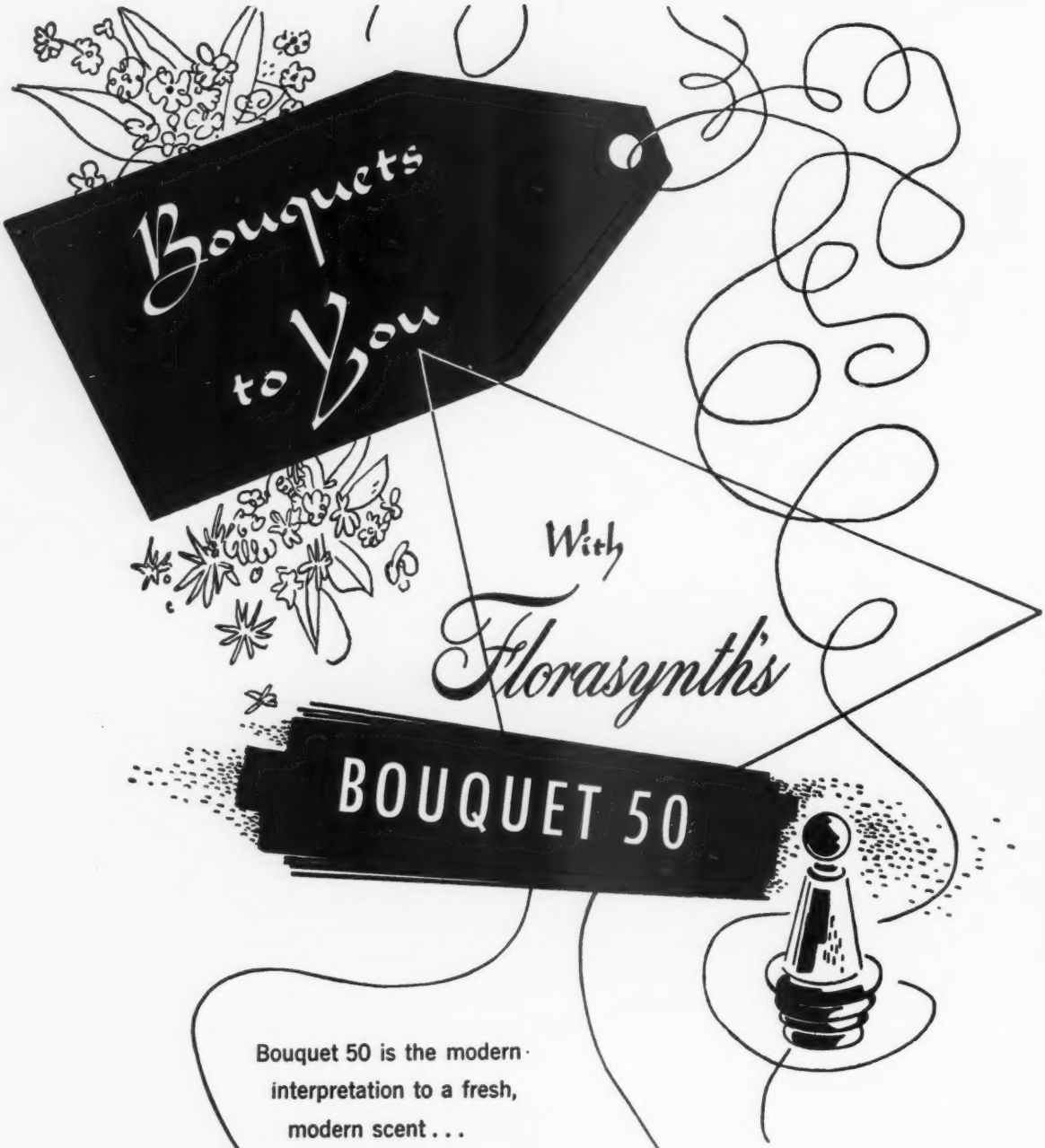
Please send me your 28 page Emeryfacts titled "Emersol Stearic Acids".

Name.....*Title*.....

Company.....

Address.....

City.....*State*.....



Bouquet 50 is the modern interpretation to a fresh, modern scent . . . the search for the new and intriguing . . . distinctly different . . . timed for successful products . . . all-ways . . .

Florasynth LABORATORIES, INC

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Compounder's Corner

Lanolin Derivatives

During recent years the use of Lanolin or modified Lanolin products in cosmetics and pharmaceuticals has extended widely and rapidly. The era of the old sticky product has given way to the more sophisticated and elegant looking ones, with a physiological purpose in mind. To satisfy increasing demands from consumers, lanolin manufacturers have embarked upon a program of intensive research and development to meet the expanding market. A careful review of the subject will reveal that today we have literally dozens of lanolin products available, some duplicates, but each with a purpose in mind and a reason for its existence.

Lanolin is dermatologically innocuous. Lanolin and its homologs have unusual emollient action and when absorbed by hard or chapped skin exerts a rapid softening action. In fact, small proportions of Lanolin or some of its fractions when added to non-emulsifying oils for fats such as liquid paraffin or petrolatum enables them to emulsify large proportions of water which they ordinarily would not.

In the formulas given below, trade-named materials are from the following sources:

Ethoxylan 50, Ethoxylan 100, Nimco Base 40-74 and Nimlesterol from N. I. Malmstrom & Co.; Lantrol and Lanfrax from Malmstrom Chemical Corp.; Sipon ES from American Alcolac Corp.; Ninol AA 62 from Stepan Chemical Company; Versene Na_4 from Dow Chemical Co.; Duponol WA Paste from E. I. duPont de Nemours & Company; Emcol MAS, Emcol E 607 and Emcol E 607S from Witco Chemical Company; Tegosept M and P from Goldschmidt Chemical Corp.; Brij 35 and Tween 20 from Atlas Powder Co.

Aerosol Hair Spray

Ethoxylan 100	1.5
PVP	2.0
Urea	1.0
SDA 40 anhydrous	95.5
Perfume	qs
	100.0

Aerosol Hair Spray

Lantrol	0.2
PVP	2.0
Myristyl alcohol	0.2
Isopropyl palmitate	0.2
SDA 40 anhydrous	97.4
Perfume	qs
	100.0

Clear Shampoo

Ethoxylan 50	10.0
Sipon ES	40.0
Ninol AA62	8.0
Polyethylene glycol 600 distearate	2.0
Sodium Chloride	1.0
Versene Na_4	0.5
Water	39.5
Perfume	qs
	100.0

Cream Shampoo

Lantrol	2.0
Duponal WA Paste	35.0
Ninol AA 62	5.0
Triethanolamine	1.6
Emcol MAS	5.0
Coconut fatty acids	3.0
Water	47.4
Perfume	qs
Sodium choloride	1.0
	100.0

Emollient Oil

Lantrol	30.0
Isopropyl palmitate	25.0
Mineral Oil	45.0
Perfume	qs
	100.0

Hair Tonic

Ethoxylan 100	7.5
Isoproyl palmitate	15.0
SDA 40	50.0
Perfume	qs

Aerosol Shave Cream

Ethoxylan 100	1.5
Water	81.8
Triethanolamine	2.8
Glycerine	8.0
Coconut fatty acids	2.1
Stearic acid	3.8
Perfume	qs
	100.0

Liquid Hair Dressing

Lantrol	6.0
Lanfrax	1.0
Isopropyl palmitate	10.0
OleicAcid	2.5
Glyceryl monostearate P	4.0
Tegosept M	0.2
Tegosept P	0.1
Water	75.0
Triethanolamine	1.2
Perfume	qs
	100.0

Hair Cream (Collapsible Tubes)

Nimco Base 40-74	10.0
Mineral oil 70 vis	15.0
Petrolatum, white	15.0
Tegosept M	0.2
Tegosept P	0.1
Water	54.1
Propylene glycol	5.0
Borax	0.6
Perfume	qs
	100.0

Nail Polish Remover

Ethoxylan 100	1.0	1.0
Ethyl Acetate	85.0	42.5
Acetone	-	42.5
SDA 40	10.0	10.0
Water	4.0	4.0
	100.0	100.0

Moisture Cream

Lantrol	5.0
Mineral oil 70 vis	20.0
Glyceryl monostearate P	8.0
Cetyl alcohol	2.0
Brij 35	8.0
Tegosept P	0.1
Microcrystalline Wax 155°	5.0
Water	47.7
Glycerine	3.0
Tegosept M	0.2
Sod. Lauryl Sulfate Paste	1.0
Perfume	qs
	100.0

Cationic Cleansing Cream

Nimlesterol	5.0
Glyceryl Monostearate P	8.0
Brij 35	5.0
Mineral oil 70 vis	28.0
Tegosept P	0.1
Cetyl alcohol	0.2
Water	50.8
Emcol E 607S	0.5
Emcol E 607	0.2
Tegosept M	0.2
Tween 20	2.0
Perfume	qs
	100.0

—Irving Colbert, *N. I. Malmstrom & Company*

Anti-Foam Hair Rinse

The paper on silicone anti-foam emulsions presented by Gergle, Gregory and Todd at the recent Scientific meeting of the Toilet Goods Association and reproduced in this issue of "Drug and Cosmetic Industry" is useful and provocative. I have had occasion to work with silicone anti-foams and have found their activity to be most impressive, but reading this paper provoked at least one idea for cosmetic application. Since I have not carried this idea to the laboratory bench, I am not sure that it can necessarily be reduced to practise.

The combination of an anti-foaming agent with a cream rinse seems to me to possess useful potential. After shampooing with the customary soap and/or detergent preparation, repeated rinsing with water is required to remove all of the lather and then the cream rinse is applied for hair conditioning. The combination of the cationic rinse with anti-foam in one preparation should add convenience to the rinse operation. A number of problems may arise in formulation, however. The anti-foam emulsions themselves, especially if stabilized with anionics or soap, may not be compatible with the cationic agent and it will then be necessary to emulsify the active ingredient in the rinse. Furthermore, there may be antagonism between the surface active agent and the anti-foam, each preventing the other from functioning, and this must be checked at the bench.

Dry Cold Wave

Procter & Gamble's new dry permanent wave, Pace, is now going into national distribution, backed by the largest advertising coverage in the history of home waves. Actually, the company characterizes the product as a lotionless wave, hoping to cater to women's distaste for the messiness and odor of wave lotions.

The package, no glass bottles, contains a two-compartment package of neutralizer (sodium perborate and an acidifying component), a soft plastic bottle to be filled with water and a sealed package of 60 end papers impregnated with the thioglycolate composition (about 0.06 grams of thioglycolic acid equivalent to each paper). The hair is thoroughly wetted, strands are rubbed with the end paper and then wound, with the end paper, on standard curlers and the curls are wet with water from the plastic bottle. Obviously this procedure eliminates the handling of alkaline, odorous waving solutions and should add ease to the whole process.

There were certainly a number of tricky problems involved in impregnating or coating the end papers with a sensitive thioglycolate and then drying them in a way to prevent oxidative deterioration, but this obvious matter must certainly have been taken care of before marketing. This essentially simple idea looks like a good one.

Consumer Research

We have heard of cases where products have been marketed, with the backing of an expensive and otherwise effective advertising campaign, and then had to undergo revision because consumer reports showed the preparation to be faulty in a number of fairly obvious ways. Where this happens, heads ought to roll. A large and noisy can should be tied to the research head who permitted the inadequately tested product to go into production; perhaps the adornment could more properly belong to the one who put so much pressure on the laboratory that the staff had to release the product prematurely. A consumer test survey must be part of a development program. This will give a representative sample of those who will eventually put out their money a chance to express their feelings about the product while there is still time to make changes.

The duality of the product and its marketing is often glossed over: the discussion of the product may assume that it will sell itself; discussion of promotion may either assume that the product is new and unique even when it isn't or may imply that a good program can sell anything. This is, of course, not true if profit is to be the criterion, not mere sales volume. It is a shameful waste of money and talent to start marketing wheels going round for a product that hasn't the uniqueness and utility to warrant the effort and even worse to put the effort behind something that could rather easily be a great better than it is.

Vancide 89

A misprint occurred in the article by I. I. Lubowe on "Anti-Seborrheic Agents" in the November 1957 issue of this magazine. There was a transposition of lines in the table showing zones of inhibition for various compounds tested. Line 28 should read N-trichloromethylthio tetrahydrophthalimide, Captan 50, Vancide 89 with zones of inhibition of 30 mm, 47 mm, 35 mm and 41 mm, showing the compound to have a very high order of activity against all organisms tested.

Dipaxin (Upjohn) is an oral anticoagulant, 2-diphenyl-acetyl-1, 3-indandione, for the prophylaxis and treatment of intravascular clots, etc. It is available in as 1 mg. tablets in bottles of 100.

Dropsprin (M. H. Smith) is a flavored aqueous suspension containing 5 grains of salicylamide (325 mg.) in each 5 cc. teaspoonful and is supplied as one and two ounce bottles.

Guess!

You can't fool her eyes . . . but the magic of Verona's research and development chemists has perfected aromatic developers and extenders that can, *and do*, fool her nose.

Clean, fresh, brilliant top notes that rival Nature's own . . . and are helping some of America's leading cosmetics along the road to leadership.

Remember . . . the important point about the point of sale is this — to cosmetics shoppers the fragrance is vitally important. The scent can send *more* sales your way! We will gladly forward samples of the Verona specialties listed at the right. Try them and see for yourself how much more successfully they help you hit, and *hold*, the high notes.

A FEW VERONA SPECIALTIES

RESEDALIA, an acetal.
VERONOL, an aldehyde.
CYCLAMAL, cyclamen aldehyde.
ROSANOL, an acetal.
PHENYL ACET ALDEHYDE PHENYL GLYCOL ACETAL
TERTIARY BUTYL DI METHYL CUMARIN
ORYCLON
FLOWER OIL WHITE LILAC.

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VERONA PRODUCTS BUILD SALES FOR *Your* PRODUCTS

VERONA CHEMICAL COMPANY Plant and Main Office: 26 Verona Avenue, Newark, N. J. 1210 Rosedale Avenue, Chicago, Ill.

New

Dry, Stabile, Free-Flowing

VITAMIN E ACETATE

- **FOR GREATER MANUFACTURING CONVENIENCE**
  Now for the first time—Dry Vitamin E Acetate Powder 25%—the first dry form to be made from pure *dl*-alpha-tocopheryl acetate, the International Standard.

- **DRY—REALLY DRY!**
  Dry Vitamin E Acetate Powder 25% Roche can be incorporated with most other dry granulations and immediately compressed without sticking and binding in tablet dies and punches. It does not liquefy or turn gummy when mixed with other vitamin entities in most multivitamin tablet formulae. Problems with cracked tablets during shelf life are greatly, if not entirely, eliminated.

- **STABILITY—EXCELLENT**
  Practically no measurable loss of vitamin E potency occurs during normal handling. This new Roche development is stabile when stored in customary shipping containers and when processed into pharmaceutical tablets.

- **MIXES WELL—DRY OR IN LIQUIDS**
  New Dry Vitamin E Acetate Powder 25% Roche, when mixed with dry multivitamin preparations, disperses readily in liquids such as fruit juices, milk and water. The vitamin E potency of these prepared solutions is well maintained.

- **GOOD COLOR AND PARTICLE SIZE**
  Having a pale ivory color, Roche Dry Vitamin E Acetate Powder 25% is similar in particle size to a mixture of Roche No. 40 and No. 60 dry vitamin A acetate powders. It is free-flowing. It has pharmaceutical elegance.

- **BIOLOGICAL POTENCY**
  Roche Dry Vitamin E Acetate Powder 25% contains 250 International Units of vitamin E per gram. Pure *dl*-alpha-tocopheryl acetate, as used in this new Roche product, has been adopted as the International Standard for vitamin E and is also available from Roche.

- DRY Vitamin E Acetate 25%—each gram contains 250 International Units.
  LIQUID Vitamin E Acetate—each gram contains 1000 International Units.
  LIQUID Vitamin E Unesterified—each gram contains 1100 International Units.
  (This latter material is highly useful as an antioxidant as well as for vitamin E value.)

- **NEW LOW PRICES**
  The fluid forms of vitamin E Roche are now at all-time low prices. New Dry Vitamin E Acetate Powder 25% is priced advantageously.

*ROCHE—Reg. U.S. Pat. Off.

VITAMIN E COMES *RIGHT* FROM ROCHE

VITAMIN DIVISION

HOFFMANN-LA ROCHE INC.

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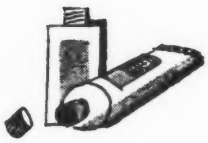
In Canada: **Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, P. Q.**



Advancing Therapy

Amphetamine-Resin Compound

Chaudhry and Saunders (1956) have shown that the chemical combination of a drug with an appropriate ion-exchange resin produces a drug-resin salt which, when acted on by the ions in the digestive juices of the gastrointestinal tract, will liberate the drug for absorption evenly over an extended period of time. Basic drugs combine with an acidic ion-exchange resin to yield a "resinate," and acidic substances combine with a basic resin to yield a resin-salt.

Both the drug resinate and the resin salt are completely insoluble. The release of the active principle is controlled by the normal laws governing velocity of chemical reactions and is unaffected by enzyme action, peristalsis, or other physiological processes.

"Dexten," according to Sir Adolphe Abrahams and Wilt. Linnell (*The Lancet* 1957, p. 1317) is a dexamphetamine resinate tablet with such properties. It has thus been designed to provide a depot from which dexamphetamine is released evenly and at a constant level over an extended period and thus to avoid the undesirable fluctuations of concentration in the tissue fluids which are bound to result from intermittent dosages with unbonded dexamphetamine. Losses due to normal metabolic processes and to excretion are being constantly restored, with the result that a smooth, uninterrupted therapeutic effect is obtained lasting 10 - 12 hours. Equilibrium is reached after 12 hours when about 85 per cent of the dexamphetamine has been liberated from the resinate, at which stage exactly the same amount of drug combines with and is released from the resin. Hence the residue remaining in the resin is not released and no accumulation occurs. This has besen proved both in vitro and pharmacologically.

The in-vitro results have been confirmed by experiments on rats, the convulsant effect of dexamphetamine being used as the significant end-point. It has been established that the resin used to form the resinate is completely inert and therefore free from danger, even when massive doses are used, as in the treatment of gastric disorders.

Clinical trials were applied in practice by several general practitioners for periods of two to 16 weeks, to 53 ambulatory obese patients.

The average duration of effect appeared to be longer than indicated by the in-vitro tests. The release of dexamphetamine in vivo (as in vitro) ceases on equilibrium being reached after about eight hours, but the therapeutic effect of the dexamphetamine released during the eighth hour continues for about 4 more hours, this being the normal average duration of activity of dexamphetamine given alone. About 85 per cent of the patients achieved satisfactory control of appetite for twelve to fourteen hours; about 3 per cent experienced insomnia, indicating a duration of action longer than fourteen hours. Such patients were promptly relieved of insomnia by reducing the dose of texten.

During treatment a mild elevation of mood was noted in most cases, but in no case did this reach a level which impaired judgment or routine daily activities. A sense of well-being and improvement in ability to concentrate were frequently mentioned. The resinate enabled the anorexic property of dexamphetamine to be made available to patients who could not tolerate ordinary dexamphetamine. Many patients remarked on the convenience of having to take only one dose at breakfast.

Side-effects were few and mild. Dizziness and headache developed so infrequently as to suggest strongly that the patients were relatively more tolerant of dexamphetamine resinate than of pure dexamphetamine.

In only 2 cases was it necessary to discontinue the treatment because of an unusual degree of intolerance to amphetamine. An uncommon side-effect of amphetamine—i.e., dryness of the mouth, complained of by 1 patient— was abolished by reducing the dosage from one to one-half tablet.

Comment: Stemming from a 1950 paper by Saunders and Srivasta, Chaudhry and Saunders (J. Pharm. and Pharmacol. *8:975, 1956*) *investigated the release of drugs, ephedrine and amphetamine, from ion exchange resins. It seems to me that this very useful idea might be extended beyond prolonging the action of drugs to making their action milder. Since gradual release is obtained by making ion-exchange resin compounds, it may be that medicinals that tend to irritate the G.I. tract might be administered in this form to release small, non-irritating concentrations over a long period of time.*

Fluoride Dentifrices and Stomatitis

T. E. Douglas (*Northwest Med.* 56:1037, 1956) observed an increasing incidence of stomatitis (inflammation of the oral mucous membrane) over a period of 15 months. Practically all of the patients were using dental powder or cream which contained a fluoride. In a group of 133 patients, ranging in age from

3½ to 92 years, as many as 6 members of 1 family using a dentifrice containing fluoride were treated for stomatitis. Controlled studies were made on 32 patients, who alternately used dentifrices containing fluorides and dentifrices free from fluorides. Each time a patient commenced using the dentifrice containing fluoride, it took less time to acquire more severe lesions than it had the previous time; also, each instance of stomatitis became more difficult to clear than the previous one.

The lesions produced by the fluoride dentifrices could not be differentiated from other common oral processes. The worst and the earliest lesions commenced on the buccal mucosa opposite the teeth, that is, in those areas which come in contact with the teeth; however, similar ulcerations were observed on other oral structures, and prolonged use of the dentifrices was sometimes followed by general involvement of the entire oral and pharyngeal regions. The treatment of early lesions requires only change to a dentifrice that does not contain a fluoride.

New Diuretic

In an attempt to find a drug that would prove more efficacious and less toxic than agents currently available, a new carbonic anhydrase inhibitor, p - sulfamyl - 2 - hydroxy - ethyl-carbanilate, identified in this paper as W-1548, was produced and tested. This compound is relatively non-toxic in animals.

Studies in rats were made with three dosage levels given daily by mouth five days a week for twelve weeks. W-1548 had no adverse effects on growth, hematology or fertility. At autopsy, no gross or microscopical lesion was discovered in the rats.

The findings were almost similar in dogs when the same dosage schedule was used as that for rats.

Because of the low toxicity and definite diuretic action of W-1548 it was deemed important to test its action against edema in man.

Patients for this study were chosen by I. Hirshleifer et al. (*N. E. J. Med.* 257:1074, 1957) from the cardiac clinic and wards of Kings County Hospital and from private practice. There were 7 (15.6 per cent) excellent, 12 (26.6 per cent) good, 14 (31.2 per cent) fair, and 12 (26.6 per cent) poor results. Of the 12 patients with poor results, 7 were refractory to all other diuretics.

Frequent blood counts, urinalyses and blood chemical evaluations revealed no untoward reactions in the group of patients investigated. Refractoriness to the drug, which developed in 6 patients (after a period of diuretic response), could be eliminated by intermittent administration of further courses.

Lastly, it should be stressed that although W-1548 does not relieve many refractory edemas when used alone, in conjunction with other therapeutic agents it often contributes the additional factor that makes the difference between cardiac compensation and decompensation.

Aspirin for Diabetes

Seven diabetic patients given an intensive two-weeks course of therapy with aspirin alone had their blood sugar and urine sugar levels restored to normal, according to Drs. James Reid and A. I. MacDougall (*Brit. Med. Journal*). All clinical symptoms of the disease, such as thirst, excessive secretion and discharge of urine, and intense itching, were "completely relieved."

The course of treatment was deliberately brief (10 to 14 days) and intensive in order to attain rapid build-up of blood salicylate levels. Despite the relatively high aspirin doses, side effects such as nausea and vomiting, classed as serious by the authors, were uncommon and easily controlled.

Drs. Reid and MacDougall made the study following the accidental discovery that aspirin was "strikingly" effective in relieving diabetes in a young patient who was actually being treated for rheumatic fever. Checking back in medical literature revealed that aspirin "was in fact used in the treatment of diabetes and that it prevented glycosuria." Experiments with rats confirmed their interest in doing further clinical tests.

Without exeception, in the seven diabetics subsequently studied, aspirin reduced the blood sugar levels "to normal or near normal by the end of the course of treatment, and after it was discontinued the sugar concentrations started to rise again."

Anti-Tuberculosis Drug

In a previous report on Verazide, which is 1-isonicotinyl-2-veratrylidene hydrazine or 3:4-dimethoxybenzal isonicotinylhydrazone, it was shown that the drug exerted a marked antituberculous activity in experimental guinea pig tuberculosis and that the acute toxicity in mice was about one-third that of isoniazid. The present paper by S. D. Rubbo et al. (*Am. Rev. Tuber.* 76:331, 1957) deals with a more detailed report on Verazide and related hydrazones. The results of tests showed that Verazide exerted a more marked and more prolonged antituberculous activity than did isoniazid or the other hydrazones. In view of this and of the fact that the hydrazones generally exhibit a significantly lower toxicity than isoniazid, it is considered that some of these derivatives would be more suitable chemotherapeutic agents for the treatment of human tuberculosis than isoniazid itself. Of the hydrazones examined, it appears that Verazide is the drug of choice for clinical application.

Vioform - Hydrocortisone Lotion (Ciba) contains 3 per cent of iodochlorhydroxyquin and one per cent hydrocortisone with 0.05 per cent methylparaben and 0.025 per cent propylparaben as preservatives. It is intended for the relief of itching and inflammation and rapid healing in various dermatologic disorders and is available as a 15 cc. plastic squeeze bottle.

Quiactin (Merrell) is said to be a new tranquilizer, oxanamide, which has a quieting action without dulling mental alertness. It is supplied as 400 mg. tablets in bottles of

Neutrapen (Schenlabs) is supplied in single dose vials containing 800,000 units of purified penicillinase in dry powdered form, to be reconstituted before use with 2 cc. of sterile distilled water.

Milprem (Wallace) is a combination of 400 mg. meprobamate and 0.4 mg. conjugated estrogens per tablet, available in bottles of 60 tablets.

Furoxone Aerodust-Veterinary (Eaton) contains 25 per cent of furazolidone in a special base and is used in chickens for the flock treatment of chronic respiratory disease.

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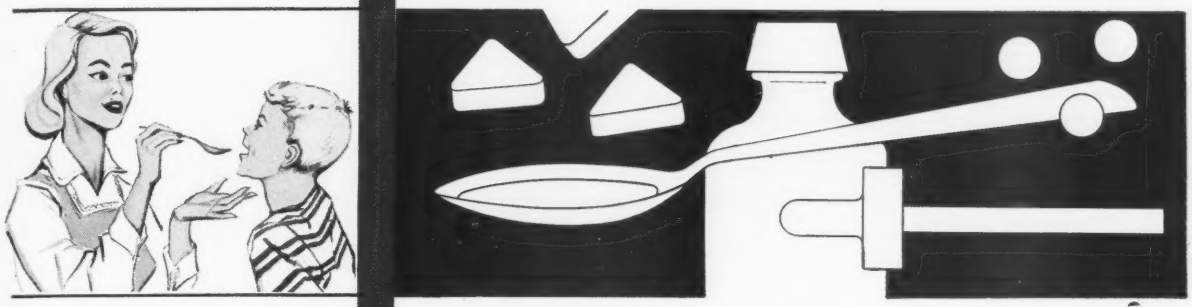

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Synthetic Geraniol

Geraniol Standard, a synthetic geraniol, is now being offered by The Glidden Company, Southern Chemical Division, Box 389, Jacksonville 1, Fla. The product has a minimum alcohol content of 98 per cent, contains alcohols associated with natural geraniol from citronella, but is free from terpenes and sesquiterpenes. Price is competitive.

The synthesis of geraniol is the first announced result of a research program initiated twelve years ago to provide a range of terpene alcohols and related aromatics of extreme purity, at stable prices and in plentiful supply. These products, of which geraniol is an example, are synthesized from turpentine by entirely new methods developed in Glidden's research laboratories. For the first time, geraniol is made available in the United States from raw materials entirely of domestic origin and not subject to quality vagaries due to soil, climate and locale. The new route to geraniol moreover assures consumers of supply regularity, price stability and material uniformity.

Essential Oils

Perfumery raw materials may be divided into three main groups: the essential oils and the products isolated from them; products of animal origin; synthetic chemicals. The essential oils constitute the most important group. Their exact function in the plant economy is not known. In some cases the oils attract insects and in other cases they are insect repellants. The manner in which oils are formed is also obscure although one theory suggests that two simple chemicals are the starting points in the reaction.

Acetone and acetaldehyde could react together and two molecules of this new compound could again react to give a chemical which, on addition of hydrogen, yields citral. From citral, an enormous number of other chemicals present in essential oils can be formed. The oils are found in various parts of the plant —petals, peels, berries, leaves, twigs, wood, bark, mosses, roots and resins. There are two main methods by which the oils are separated from the plant: (*a*) By steam distillation; (*b*) by extraction with volatile solvents such as benzene, lythene (purified petrol fraction) and in some cases, alcohol. Two other methods are extraction with fats (enfleurage) and a simple pressing of the oil from peels, as, for example, with lemon oil. Although certain oils will not withstand the somewhat harsh treatment of steam distillation, many oils are processed in this way, most of the root, wood, bark and leaf oils in particular. In many cases the trees are cut down and the wood, etc., taken to local distillation units. The oil obtained is sent to central bulking depots before final distribution. For years the distillation units were crude vessels, in which the material was fire-heated with water. Water and oil then distilled over and the oil was separated. The present tendency is to use distillation plants in which it is possible to inject steam into the vessel. Also, woods, leaves, berries, etc., are sent to the cities where they can be expertly extracted under modern conditions.

Extraction by means of volatile solvent, in most cases, gives a bigger yield and extracts the oil in a gentler fashion than does steam distillation. Sometimes leaves, petals, mosses, etc., are simply stirred in a large vessel with solvent. When the extraction is complete, the solution is passed through a filter and the solvent distilled away. In another up-to-date method, a battery of percolators, each with a capacity of about one hundred gallons, are fitted with perforated trays on which the flowers are placed. At one end of the series is a solvent tank and at the other end a vacuum still. The solvent runs slowly through the various percolators and finally reaches the vacuum still where the solvent is distilled away and returned to the solvent tank—the perfume, of course, remaining in the retort. The process is repeated many times until the flowers are exhausted of their perfume. The product left behind contains, in addition to the perfume oil, insoluble waxes and at this stage it is known as a "concrete." On treatment with alcohol, and its ultimate removal, the "absolute" is obtained. Jasmin flowers yield about 0.3 per cent. and rose about 0.24 per cent. of concrete. In some cases the petals are pressed to break up the cells and under these circumstances the yields are often higher.

In the enfleurage method of extraction the petals are placed upon the surface of glass trays (chassis) upon which a layer of specially purified animal fat has been spread. The trays are stacked together so that the petals are contained between two layers of fat and left for about twenty-four hours. During this time the volatile oils are absorbed by the fat layer. Petals are continuously replaced by fresh ones every day until the fat is saturated with flower oil. Extraction of the mass, the "pomade," with alchol separates the fat and yields the floral absolute. This process is particularly valuable in the case of certain flowers, e.g., jasmin and tuberose, which continue to produce perfume after picking. Only by the gentle process of enfleurage is it possible to extract the maximum yield

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Like to the scents of flowers in Spring."

—Old French Carol.

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EST. 1871

of oil from the petal. With most other flowers, essential oil production ceases on picking and therefore a more drastic extraction process, such as with hot fat, gives the maximum oil yield. Hot fat extraction has, however, been almost entirely superseded by modern methods of solvent extraction. The enfleurage process does not remove all the oil from the petal, and valuable oil is also lost in the traces of fat adhering to the exhausted petal. The exhausted petals are, therefore, usually solvent extracted and yield the so-called absolutes of chassis.

—D. Butterfield and J. Picktall, *Pharm. J.* 1957, p. 503

Spray-Dried Perfumes

As a result of new techniques in spray drying and formulation developed in the Dodge & Olcott, Inc., Product Development Laboratories, practical locked-in perfumes are now available for commercial use. Christened 'Fragrance - Seal' by D&O, these new materials have indefinite shelf-life, are easy to handle, economical, and truly representative of the liquid perfume used in their manufacture. They answer the old problem of perfuming such products as powdered bleaches, dry detergents, soap powders, household and specialty cleansers, scouring powders, etc., in the most practical and effective way that has been discovered to date.

Flavored Pharmaceuticals

No pharmaceutical manufacturer would dream of dispensing an unflavored liquid pharmaceutical, yet very few have considered the general instead of sporadic use of flavors in tablets. It seems to me that here is a good spot for the application of pharmaceutical elegance. Even those tablets intended for swallowing rather than chewing or dissolving in the mouth are often likely to leave slight residual tastes that are far from pleasant. There is no reason why the most routine compressed tablet should not include a trace of sweetening and flavor so that even quickly swallowed preparations will leave a pleasant trace rather than an unpleasant bitter or sour one. Placebo effects being what they are, the pleasant effect might result in significantly higher pharmaceutical effectiveness.

There is no good technical and economic reason why this same elegance cannot be extended to coated tablets and hard and soft gelatin capsules, the flavor (and sweetening) being incorporated into the outer coating.

And I am not talking about pediatric products, where flavoring is, if anything, sometimes used to excess. I am sure that adults would be rather pleased if their aspirin tablets were to leave a hint of sweetness and flavor instead of a hint of bitter vinegar.

Essential Oil Extraction

W. Guelden, in an article in *P.E.O.R.* 48:581, 1957, and originally published in *Kosm. Parf. Drog. Rund.*, discusses the best methods of obtaining essential oils from the original raw materials. Extraction methods should be adapted to the distribution of the oil in the vegetable matrix. Each of several essential oil sources hold the oil in a different location and requires particular extraction methods.

Products in which the oil is present in *capillaries, glands,* or *cuticular pockets:*

Many extracts of flowers and leaves are in this group, such as patchouli, lavender, thyme, clary sage, humulus. The oil containers are on the surface; therefore a preparatory crushing and cutting step is unnecessary. Cold extraction is indicated. The most suitable solvents and procedures for use in this case are: extraction with methanol or ethanol—adsorption of chlorophyll in benzol—clarification in light petroleum, or ethyl acetate.

Products with the perfume oil dispersed in the *entire plasma:* This group covers only dry materials, or products that have been stored over a long period of time. The protein linkages in the cells must be broken by fermentation to develop the specific odors.

Examples are iris, liatrix, oak moss, vetiver, ginger, etc. Extremely fine subdivision and even pulverizing of the raw material is indicated. Extraction at medium temperatures and with continuous stirring should produce good results. The sequence of solvents to be used is methanol, acetone, benzene, light petroleum.

Products holding their oil in interior secretion *glands*. Examples are carnation and the caryophylls, foenum graecum, tonka, vanilla. Moderate crushing or cutting is sufficient and the fattiness of the raw material will often prevent further subdivision. The sequence and selection of solvents has an important effect on the yield. Generally, the following is indicated: absolute ethanol, benzene, petroleum ether.

Superficial distribution of oils: Tanner's spent bark is an example. Preliminary treatments are unnecessary, particularly with fresh material. The sequence of solvents and operations should be ethanol 90 per cent, ethyl acetate, methylene chloride.

Resins. The natural resinoids are still important bases and fixatives. These substances are excretions and not inclosed within the plant, so that fine grinding is not necessary. Products of this type are labdanum, styrax, opoponax, elemi, benzoin, tolu. These natural bases are often so completely polymerized that the base solvents may be benzene or tetrahydrofuran. Concentration, clarification and bleaching should be complemented by extraction with lower petroleum fractions, ethyl acetate or chlorinated hydrocarbons to obtain individual odor notes.

Aerosol Fragrances

A new series of aerosol fragrances which are highly soluble in the commonly used propellants has been developed in the research laboratories of van Amerigen-Haebler, Inc. The fragrances make possible the formulation of "dry" aerosol sachets and related products requiring little or no alcohol.

The propellant-soluble fragrances overcome a number of problems which have long confronted aerosol producers. Among these has been the tendency of resinous constituents in some fragrances to settle out and impair valve action. Moreover, certain types of fragrances are incompatible with fluorinated hydrocarbon propellants and unstable in terms of aromatic quality. These new VAH fragrances have none of these shortcomings and permit the perfumer to include in his compositions such normally insoluble ingredients as benzoin, oak moss, tolu, tonka, mace, myrrh, styrax and fir balsam.

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Skin Research

Malonate Antiperspirant

According to A. Rostenberg and E. L. Gonzalez (*J. Invest. Dermatol.* 29:251, 1957), it has been known for some time that malonate ions inhibit the enzyme succinic acid dehydrogenase (S.A.D.) and it has been shown by others that S.A.D. activity seems to be intense in the sweat duct at the time of eccrine sweating. Rostenberg and Gonzalez thus considered the possibility that topical application of malonic acid salts might inhibit perspiration. A definite inhibitory action was noted.

The idea was tested by inducing thermal sweating in human subjects and determining the amount of inhibition by means of a starch-iodine indicator system. Sodium malonate in concentrations of 20 per cent was incorporated into a vanishing cream and a hydrophilic ointment and rubbed into circumscribed areas of the back. Nine sites were tested simultaneously in each person and the areas were subsequently treated with the indicator. Heat chamber treatment indicated that malonate produced an inhibition of sweating when compared with untreated or control areas and that malonate preparations were at least as effective as aluminum salt antiperspirants. Sodium malonate was effective in a number of vehicles, including an aqueous solution. Other salts of malonic acid were used, but experience with them was limited and not reported, while combinations of salts of malonic acid and standard antiperspirants are under trial.

Comment: No indications, as yet, as to the toxicity and irritation and sensitizing potential of this compound, but adverse response would be surprising. This paper really sets the mental wheels turning. To my knowledge, this is the first instance of an anion exhibiting antiperspirant activity; the difference in activity of aluminum chloride, nitrate, sulfate, citrate, etc. may be due to different complex formation or degrees of ionization, but activity per se has not been ascribed to the anion. This suggests salt formation between active cations, aluminum or quaternary ammonium compounds, and malonic acid for total action by a salt. A quaternary salt might give better penetration into the sweat gland opening and thus lead to enhanced activity. A small search indicated the existence of the aluminum salt of diethylmalonic acid, insoluble in water but soluble in alcohol. The sodium malonate itself should be compatible with alcohol and soap and thus permit the easy preparation of antiperspirant sticks.

Finally, a natural consequence of this paper would be a research program looking for a whole series of succinic acid dehydrogenase inhibitors (some of the enzyme inhibitors investigated for dentifrice use might prove effective and useful) which would be useful alone or in combination with astringents and antibacterials for use in physiological deodorants.

Zirconium Granulomas

W. B. Shelley and H. J. Hurley, report in *Nature* 180:1060, 1957 concerning granulomas resulting from hypersensitivity to soluble zirconium salts and promise an even more detailed paper in the *British Journal of Dermatology*. Each of 10 normal, healthy, male volunteers received four injections of 0.02 ml. of a one per cent aqueous solution of sodium zirconium lactate into the skin and four injections subcutaneously. All developed small, non-inflammatory fibrous masses at the site of the injections. At the end of six months, one of the subjects suddenly developed granulomas, approximately 5 cm. in width at the site of the injections. Zirconium was found in the lesion at a concentration of 10^{-5}.

Investigation revealed that this subject had developed a state of allergic hypersensitivity to zirconium and was sensitive to dilutions as low as 10^{-6} in all areas of the skin. The reaction was produced by sodium zirconium lactate, zirconium chloride and zirconium sulfate in dilute solution, but not by silicon dioxide or beryllium sulfate. Six patients who had developed axillary granulomas following the use of zirconium deodorants responded by the local, delayed formation of granulomas after the injection of 0.02 ml. of 10^{-3} sodium zirconium lactate. Twenty control subjects showed neither clinical nor histological response to this injection. The authors concluded that the state of hypersensitivity to zirconium was acquired; the granuloma reaction was specifically elicited only by zirconium; extremely high dilutions of the zirconium were capable of producing the granulomatous response.

Comment: This report seems conclusive with respect to soluble zirconium salts, but it may be suggestive with respect to "insoluble" zirconium compounds used in poison ivy treatment. So far, a clean bill of health has been claimed for these products. It may be wise for tests to be made with dilute suspensions of zirconium carbonates and hydroxides to determine their ability, if any, to generate an allergic hypersensitivity response.

Mercuric Sulfide Gel for Acne

L. Goldman and R. H. Preston (*A.M.A. Arch. Dermatol.* 76:780, 1957) have treated 604 cases of acne topically with a new mercuric sul-

fide gel. The preparation contains red mercuric sulfide, urea and sulfur in a gel based upon modified montmorillonite. It is cosmetically acceptable, contains no coloring agents or greases and has a mild, not excessively drying quality.

Comment: This sounds as if the base might be Veegum, which is capable of producing very useful greaseless gels and ointments for dermatological applications.

Antifungal Treatment

Pyrrobutamine, sodium undecylenate, and combinations of these agents exhibit marked in vitro fungistatic activity against several species of common dermatophytes according to A. L. W. Weiner and J. Schwarz (*A.M.A. Arch. Dermatol.* 76:783, 1957). Their effect is greater than that of undecylenic acid, and two strains of Trichophyton rubrum were more sensitive to these agents than other common dermatophytes.

Various topical preparations containing pyrrobutamine and combinations of pyrrobutamine, undecylenic acid, and sodium undecylenate appear to be effective in the therapy of superficial mycotic infections of the skin. This is particularly true in some T. rubrum infections previously resistant to treatment with other antifungal agents. The clinical effectiveness of these medications parallels their behavior in vitro, and their capacity to irritate apparently is relatively low.

As experience with the use of the various compounds accumulated, it became apparent the CT 781 (5 per cent pyrrobutamine and 20 per cent sodium undecylenate) and CT 783 (2.5 per cent pyrrobutamine and 10 per cent sodium undecylenate) in vanishing cream type base were the most effective and least irritating preparations.

Alopecia Areata Treatment

At its first dinner meeting of the year, held January 15 at the Park Avenue Brass Rail Restaurant, the New York Chapter of the Society of Cosmetic Chemists heard Dr. Norman Orentreich describe some of his recent studies on alopecias. Dr. Orentreich, Chief of the Hair and Skin Section of the Skin and Cancer Unit of the Graduate Medical School, New York University-Bellevue, has studied clinically and experimentally several hundred cases of baldness of many types over a period of more than two years. His talk was concerned with two general types of baldness: the rapid, partial or total type (not infectious or congenital, etc.) and the slower "pattern" baldness common to males.

The first of these, the alopecia areata, totalis universalis type, appears to be associated with a disturbance of the enzymatic-hormonal system governing hair growth. In carefully and fully controlled experiments, Dr. Orentreich and his associates at the Hair and Skin Clinic have by the injection of steroids succeeded in regrowing normal hair in areas that have been bald for many years. Hair loss reoccurs when the steroid injections are discontinued. To be active in regrowing hair, the steroids must have a certain molecular structure and fall within a certain solubility range. For example, hydrocortisone is active whereas cortisone is not. Other steroids found to be active are prednisolone acetate, fluorohydrocortisone, and prednisone. The problem in application is to get an optimum concentration at the site and to maintain a depot there for a period of several weeks. Injection and tattooing have been successful but topical applications have not.

In alopecia prematura, the common pattern baldness of males, Dr. Orentreich and his associates were unable to regrow hair by this method. Other studies of such cases using autoplastic skin grafts indicated that skin transplanted from hairy areas of the scalp to bald areas of the same scalp will produce normal hair, whereas bald skin transplanted to hairy areas will not.

Hair Follicle Cholinesterases

In this investigation W. Montagna and R. A. Ellis (*J. Invest. Dermatol.* 29:151, 1957) found the presence of demonstrable specific cholinesterase in sensory as well as in some motor nerve fibers. Since the nerves around them subserve touch, hair follicles must be tactile sense organs. Both in the distribution of the nerves around them and in the function of these nerves, the hair follicles of the scalp are similar to the follicles of the vibrissae, which are found in the lips of all mammals except man; in both cases the nerves are reactive for specific cholinesterase. Cholinesterases have also been found in other sensory fibers, such as in Meissner and Pacinian corpuscles of the human finger and in the gustatory cells in the tongue of several laboratory animals. The free nerve endings in the epidermis, which subserve pain are reactive for cholinesterase. This is not easily reconcilable with the concept that the presence of cholinesterase is rare outside of the parasympathetic nervous system, where only the postganglionic fibers are always covered with specific cholinesterase along their entire course, from the synapse to their terminations. These findings are puzzling, and it remains for the physiologist to redefine the role of cholinesterase in nerve tissue.

When hair follicles are inactive, they are much shorter than when they are active. Thus, they may slip out of the lower part of the nerve plexus that surrounds them. The nerve plexus, however, remains intact, and the follicles grow back into these collapsed plexuses when they become active again.

Using the technic for cholinesterase activity, two nerve plexuses were demonstrated around the hair follicles of the scalp. The larger plexus is situated at the level of the sebaceous glands and its fibers are continuous with the cutaneous plexus and with the fibers surrounding the sebaceous glands and the eccrine sweat glands.

Antibiotic Treatment of Acne

This paper by M. Robinson discusses the role of broad spectrum antibiotics in the over-all management of acne vulgaris and reports the results of oral antibiotic therapy in controlling the pustular component in 280 patients completing the prescribed treatment course. Tetracyclinenystatin was employed in 104 patients, and tetracycline in 176. No roentgen therapy or other definitive therapeutic modality was used with the antibiotics. Excellent or good therapeutic results were obtained in 58.7 per cent of patients receiving tetracycline-nystatin, and in 60.2 per cent of those receiving tetracycline. Clinical response correlated well with results of *in vitro* antibiotic sensitivity tests. Toxic effects necessitated discontinuance of therapy in 6.7 per cent of patients on tetracycline-nystatin, and in 9.0 per cent of patients on tetracycline.

Effect of Cosmetic Ingredients and Preparations on Moisture Loss from the Skin* CONCLUSION

BY DONALD H. POWERS AND CHARLES FOX
WARNER-LAMBERT PHARMACEUTICAL COMPANY, INC.

The surface active materials studied which are usable as emulsifiers in consmetic formulation have little effect in influencing the rate of moisture loss from the skin. It was felt that these materials might aid in holding water in the skin by forming emulsions with the fatty matter normally present in the skin. But this does not appear to be the case and the majority of emulsifiers studied allow the moisture to pass directly through to the atmosphere. Lanolin and sorbitan sesquioleate, however, which are capable of forming water-in-oil emulsions act as barriers and do retard moisture loss. Lanolin had as great an effect on retarding the rate of moisture loss as did most of the non-surface active materials studied. This is possibly due to its ability to form an occlusive film rather than to its action as an emulsifier.

More surprising perhaps was the discovery that a few materials studied can actually accelerate moisture loss. For example: the polyoxyethylene ethers of oleyl alcohol containing 5 to 20 ethylene oxide groups were found to accelerate moisture loss by 22-25 per cent. These ethers may have the ability to affect the barrier layer. Mali (3) feels that it is the fats in the barrier layer along with its tight keratin structure which accounts for its ability to limit the amount of water loss from the skin. Perhaps the polyoxyethylene oleyl ethers are able to alter the fatty matter of the barrier layer, so as to allow a greater moisture loss from the skin.

Blank (4) in a careful study has shown that the amount of water retained by cornified epithelium is directly related to the relative humidity of the surrounding atmosphere. Working with living skin there is a reservoir of moisture or water in the lower layers of the skin and compounds such as these oleyl polyoxyethylene ethers appear to facilitate and increase the loss of water from the skin surface into a dry atmosphere.

Work with glycerine and propylene glycol has been quite surprising. When a film of these well-known humectants is applied to the living skin surface they consistently and repeatedly increase the amount of moisture lost to a dry atmosphere. Hourly moisture loss reading obtained are shown in Table 3. Sorbitol was not used as the anhydrous product is a crystalline solid. In the winter, both indoors and out the relative humidity is usually lower and the actual moisture content of the air is lower. When homes and apartments are heated with hot air the indoor humidity frequently drops below 20 per cent in cold weather. Under these dry or low humidity conditions it appears that glycerine and propylene glycol draw the moisture within the skin to the surface so that the skin loses water faster when coated with an humectant than without one. When you think of living skin as a reservoir having as high as fifty per cent mositure (19), it is reasonable to expect than an humectant on the surface as it dries out and loses its moisture to the dry atmosphere, will draw the moisture from the skin below it. Similar increased moisture losses are obtained experimentally when 10 per cent aqueous solutions of glycerine and propylene glycol are applied to the skin. The atmospheric conditions at which this will take place can be predicted by referring to vapor pressure data for glycerine-water mixtures and air.

On the Graph in Figure 3 are plotted the water vapor pressure in air for different relative humidities at selected temperatures. The broken vertical lines intersecting these isotherms represent constant humidity glycerine-water mixtures.

Referring to the Graph in Figure 3, if one applies a dilute glycerine solution to the skin at a room temperature of 20°C and 30 per cent relative humid-

TABLE III
Hourly Moisture Loss from Inner Surface of Forearm After Application of Anhydrous Glycerine and Propylene Glycol

Test Material	Subject	Moisture Loss in mg. Hourly (c) 1st hour (a) (b) T	C	2nd hour T	C	3rd hour T	C	4th hour T	C	Total Moisture Loss T	C	Average Effect on Moisture Loss
Anhydrous Glycerine	C.F.	12.9	9.3	13.4	9.0	12.8	9.2	—		39.1	27.5	42% increase
	F.M.	5.3	3.6	4.6	3.1	5.2	3.8	4.8	2.9	19.9	13.4	41% increase
Anhydrous Propylene Glycol	F.M.	11.1	9.2	9.6	5.7	6.8	4.4	7.1	6.0	34.6	25.3	37% increase
	C.K.	8.3	6.6	6.6	4.4	8.2	6.5	—		23.1	17.5	32% increase

(a) T = Test Material
(b) C = Control
(c) Moisture loss divided by 4.91 expresses moisture loss in mg./cm².

*From proceedings of the Scientific Section of the Toilet Goods Association, Inc., 28:21 (1957).

Trade Literature

Schering Booklet

Schering Corporation, Bloomfield, N. J., has issued a 20-page booklet entitled, Let's Get Acquainted. This booklet, coming as it does after the merger of Schering with White Laboratories, is designed to give the history, officers, products, plants, and other information on both companies in the merger.

Dow Chemicals

The Dow Chemical Company, Midland, Michigan, has issued a new edition of its catalog which gives the latest information on properties and uses of some 375 of Dow's basic industrial, pharmaceutical, and agricultural chemicals. The new, 38-page edition includes descriptive information on principal product groups, given in tabular form for quick, easy reference.

Hydraulic Hand Lift Trucks

The Association of Lift Truck and Portable Elevator Manufacturers, 1 Gateway Center, Pittsburgh 22, Pa., has issued an 18-page booklet on mechanical and hydraulic hand lift trucks. The booklet is described as a basic book on mechanical and hydraulic hand light trucks—what they are, how they operate, how to select and how to use them.

Mixer for Dry Materials

Buflovak Equipment Division, Blaw-Knox Company, 1543 Fillmore Avenue, Buffalo, N. Y., has available a 4-page bulletin No. 382 which describes a revolutionary design of mechanical mixer for dry materials. The bulletin explains, by cross-section view, how the machine quick mixes any number of dry materials in any proportion by processional motion of a revolving screw flight moving inside an inverted cone body.

Ceramol

Aceto Chemical Co., 40 Lawrence Street, Flushing 54, N. Y., has available a new 20-page booklet on Ceramol, a clear-white smooth-feeling cosmetic base of higher alcohols and higher alcohol sulfates.

Collapsible Tubes

A comprehensive manual devoted to the proper selection of collapsible tubes is available from A. H. Wirz, Inc., 4th and Townsend Streets, Chester, Pa. This 32-page, spiral-bound, color-printed booklet lists important specification factors — tube size, tube openings, tube closures, tube liners, and tube decoration. Selector charts serve as guides in determining compatibility of various products with such tube metals as aluminum, tin, lead, and special alloys. Advantages of single use tubes, strippable lithography, and other special techniques, are described.

Silicones Guide

Dow - Corning Corporation, Midland, Michigan, has issued its 1958 Silicones Guide. This 16-page booklet describes over 150 commercially available Dow - Corning silicone products, many of which were introduced over the past year. It contains detailed charts, tables, graphs, and data on properties and performance, along with illustrated examples on how silicones can cut costs, simplify design, and add new sales appeal.

---

ity, water will be lost from the glycerine solution until a 90 per cent glycerine/water mixture forms. If the skin is then exposed to air at a relative humidity below 30 per cent, regardless of temperature, more water will be lost from the glycerine. On the other hand, if the skin is exposed to an atmosphere of over 30 per cent relative humidity, one would expect the glycerine to pick up moisture from the air. Further work is planned using mixtures of humectants and water and mixtures of different humectants to study their action. It seems probable that glycerine-emulsifier systems will behave quite differently from glycerine alone and proper formulation will undoubtedly give a lower moisture loss from the surface resulting in softer skin.

Effect of Scrubbing with Detergents on Moisture Loss from the Skin

The lower half of the forearm was scrubbed vigorously with the following five surface active agents: (a)—a 60 per cent triethanolamine alkyl aryl sulfonate solution, (b)—soap, (c)—30 per cent sodium "lauryl" sulfate solution. (d)—2:1 diethanolamine-coconut fatty acid condensate and (e)—35 per cent solution of N-ethyl, N-soya morpholinium ethosulfate. The scrubbed area was then rinsed in warm tap water. This process was repeated and then the entire arm rinsed in warm tap water.

The skin was allowed to air dry for a half hour and weighed dessicators were then applied to the scrubbed and also to the unscrubbed adjacent area. The moisture loss data are presented in Table 4.

N-ethyl, N-soya morpholinium ethosulfate, a cationic, showed the greatest increase in water loss. The triethanolamine alkyl aryl sulfonate treated area showed an appreciable increase in the rate of moisture loss. The cationic material is unquestionably absorbed by the skin so it would be expected to have a greater effect. It may be that certain hygroscopic or moisture retaining components are stripped from the skin. This possibility has been suggested by Flesch (5) in the paper which he published earlier this year. However, a great deal more work and study is needed before a complete answer is available.

TABLE IV
The Effect of Scrubbing with Detergents on the Moisture Loss From the Inner Surface of the Forearm

Detergent	Subject	Moisture Loss in mg. for 2 Hour Test Scrubbed Area	Control	Effect on Moisture Loss
Trienthanolamine Alkyl Aryl Sulfonate (60%)	C.F.	17.0	13.4	27% increase
Soap	L.C.	12.2	13.0	6% decrease
Sodium Lauryl Sulfate (30%)	F.M.	11.6	10.7	8% increase
Diethanolamine Condensate of Coconut fatty acid (2.1) 100%	C.K.	14.6	13.0	12% Increase
N-Ethyl, N-Soya Morpholinium Ethosulfate (35%)	J.T.	21.6	12.8	68% increase

(Continued on page 239)

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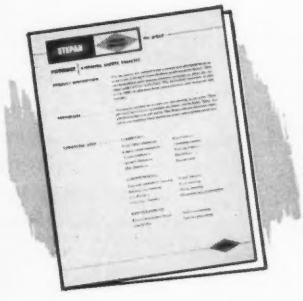
TRADE NAME	CHEMICAL DESCRIPTION	PHYSICAL FORM	ACTIVE	FREE FATTY ALCOHOL	CHLORIDE	SULFATE	pH 1% SOLN.	LBS./GAL. 30°C
Stepanol WA Paste	Sodium Lauryl Sulfate	Paste	28-30	1.5-3.0	1.4-1.8	1.4-1.8	7.5-8.5	8.67
Stepanol WAQ	Sodium Lauryl Sulfate	Viscous liquid	28-30	1.5-3.0	0.3-0.8	1.4-1.8	7.5-8.5	8.67
Stepanol WA Special	Sodium Lauryl Sulfate	Clear viscous liquid	28-30	1.0-2.5	0.3-0.8	0.5-1.0	7.5-8.5	8.67
Stepanol ME Dry	Sodium Lauryl Sulfate	Powder	90-94	1.5-3.5	1.0-2.0	1.5-3.5	8.5-11.0	
Stepanol ME Dry AW	Sodium Lauryl Sulfate	Powder	90-95	0.5 Max.	1.0-2.0	1.5-3.5	8.0-10.5	
Stepanol WAT	TEA Lauryl Sulfate	Clear liquid	39.50-41.0	1.3-2.0	1.0-2.0	2.3-4.5	7.0-8.5	8.7
Stepanol DEA	DEA Lauryl Sulfate	Clear liquid	33.5-36.0	1.25-3.25	1.3-2.6	2.6-3.5	8.4-8.7	8.58
Stepanol AM	Ammonium Lauryl Sulfate	Viscous liquid	28-30	1.5-3.0	0.5-2.0	1.5-2.0	5.5-6.5	8.53
Stepanol T-28	Special Sodium Lauryl Sulfate	Viscous liquid	35.5 Min.				9.0	8.6



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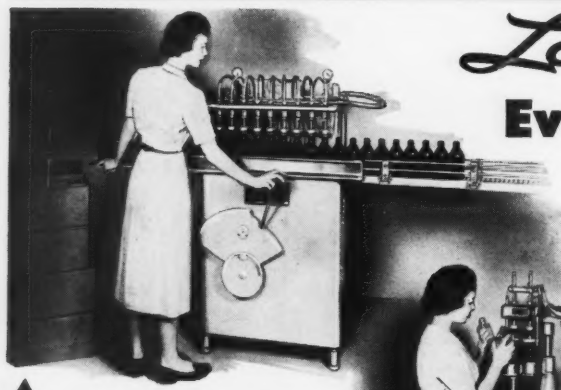

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The Alkaloids, *by K. W. Bentley, University of Aberdeen, Vol. I, 237 pp., Interscience Publishers, Inc., New York, (1957), cloth,* **$4.**

The aim of this book, and of the series of which this is the first, is to present to the reader an account of the salient features of the degradative and synthetic work on which the structures of representatives of the major groups of natural products are based. The present volume is devoted to a consideration of the ten most important groups of alkaloids as follows: Alkaloids of the Pyrrolidine Group—the Pyridine; Piperidine Group—the Isoquinoline Group: I—the Isoquinoline Group: II—the Morphine Group—the Quinoline Group—the Indole Group I and II—the Erythrina Alkaloids, and Colchicine.

Advances In Enzymology Vol. XIX, *Edited by F. F. Nord, Fordham University, 457 pp., Interscience Publishers, Inc., New York (1957), cloth,* **$9.85.**

This book is part of a series. The present volume deals with: Enzymic Aspects of Photosynthesis, by Wolf Vishniac, B. L. Horecker, and Severo Ochoa—Mechanisms of Oxygen Metabolism, by H. S. Mason-Aktivierung Von Aminosduren, by Theodore Wieland and Gerhard Pfleiderer—The Properties of Papaian, by J. R. Kimmel and Emil L. Smith—Les Voies Principales de l'Assimilation et Dissimilation de l'Azote ches les Animaux, by Alexandre E. Braunstein.

Unexpected Reactions to Modern Therapeutics *(Antibiotics), by Leo Schindel, M.D., 146 pp., pocket size, Charles C. Thomas — Publisher, Springfield, Ill., (1957), cloth,* **$3.**

The first part of this book deals with unexpected reactions to antibiotics and describes signs and symtoms due to these reactions. One chapter is devoted exclusively to diseases due to antibiotic resistant bacteria, an entirely new entity since the advent of antibiotics which has provided the medical profession with a host of clinical and therapeutic problems hitherto unknown. Emphasis is put on the management of unexpected reactions.

Human Relations In Industrial Research Management, *Edited by Robert Teviot Livingston and Stanley H. Milberg, Columbia University Press, New York, (1957), 418 pp., cloth,* **$8.50.**

Based primarily on the proceedings of the Sixth and Seventh Annual Industrial Research Conferences, this volume brings together —with integrating introductions— twenty-seven papers on the human aspects of organized research. Among other things, the papers analyze the nature of research management jobs, the role of the manager, and the individual, social, and cultural factors that affect the processes of organization and management in industrial research.

Clinical And Immunologic Aspects Of Fungous Diseases, *by J. Walter Wilson, M.D., University of Southern California, 280 pp., Charles C. Thomas — Publisher, Springfield, Ill., (1957), cloth,* **$6.75.**

This book is written for clinicians but it should appeal also to all who are interested in medical mycology and the study of infectious diseases in general beyond the level of pure laboratory technology. It should stimulate study of fungous diseases in general, resulting in the correct diagnosis of a larger percentage of those cases actually in existence, and early enough in the course of the disease to afford time for a therapeutic approach to be successful.

Digitalis, *compiled and edited by E. Grey Dimond, M.D., University of Kansas Medical Center, 255 pp., Charles C. Thomas — Publisher, Springfield, Ill., (1957), cloth,* **$7.**

The eleven contributors to this volume are representative of those working presently in this field in the United States. Their individual papers and the panel discussion have been oriented toward the practical applied use of the drug and its background pharmacology. Collected here are the present day concepts of: The use of this ancient drug. Up-to-date ideas of dosage. Treatment of intoxication. Preparations of choice.

Diseases Of The Nose, Throat And Ear, *by Howard Charles Ballenger, M.D., and John Jacob Ballenger, M.D., Northwestern University Medical School, Tenth Ed., Illus., 968 pp., Lea & Febiger, Phila., (1957), cloth,* **$17.50.**

The test of fifty years and nine successful editions are behind this 10th edition of one of the leading texts and reference books in its field. All diseases of the nose, throat and ear are considered fully and in complete detail. Anatomy, functions and treatment, both medical and surgical, are so well organized that you can turn to this work with full confidence that its guidance will be adequate and correct on every phase of otolaryngology. The present edition embraces many changes, especially new sections on Physiology of the Nose, Eustachian Tube and Hearing. Many new illustrations have been added.

Source Book of Industrial Solvents, Vol. II *(Halogenated Hydrocarbons) by Ibert Mellan, Pioneer Chemical Co., Inc., 267 pp., Reinhold Publishing Corp., New York (1957), cloth,* **$7.**

This is the second of a series of four volumes. It is devoted to halogens, flourinated hydrocarbons, chlorinated hydrocarbons, brominated hydrocarbons, and iodinated hydrocarbons. The solvents are classified in accordance with their distillation range. This handboook intends to select from the colossal amount of available literature those materials of greatest practical value, and to present those materials in an organized, compact, readily accessible manner.

Van Nostrand's Practical Formulary, *edited by William R. Minrath, Ch.E., 336 pp., D. Van Nostrand Co., Inc., Princeton, (1957), cloth,* **$5.95.**

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In terms of aqueous jellies and pastes, I do not believe that the vehicle has much influence on systemic absorption, this depending largely upon the nature of the medicament itself. Topical treatment, however, is another matter. In some cases the vehicle should spread easily to cover available surfaces, in others, local action within a circumscribed area is required. There are a number of gums, synthetic, natural and processed that have been used and found to be quite satisfactory. An interesting point is the difference that will be obtained in using different viscosity grades of the same synthetic gum—a jelly made to a certain viscosity with a low concentration of high viscosity gum will behave quite differently in the presence of body fluids than will a jelly of the same viscosity made with a high concentration of low viscosity material. Mixtures of gums, not especially stressed in trade literature may often be particularly useful if due care is taken to avoid incompatibilities. Thixotropy is a very desirable characteristic and can be readily built into the formulation by the use of a mineral, inorganic thickening and suspending agent widely used for this purpose. Necessarily, selection of thickening agents must be made on the basis of desired pH and stability properties as determined by the active ingredients.

A properly formulated, we might even say designed, thixotropic jelly will be readily packaged in a collapsible tube and be readily extruded as a soft, plastic mass through any suitable applicator, but will quickly "set" to a mass that will retain its shape until it is mechanically disturbed again. Cream formulations, as emulsions, may show this property of thixotropy, but usually to a much more limited extent.

(*Continued from page 234*)

Effect of Several Commercial Cosmetic Emulsions on Rate of Moisture Loss from the Skin

Several emulsions now in popular market demand were tested for their effect on the amount of moisture loss from the skin. Among the products tested were an anionic hand lotion, a cationic hand lotion, a night cream, a barrier cream and two "moisturizing" lotions.

In this test one gram of lotion was rubbed into the test area on the inner surface of the forearm, allowed to air dry for 30 minutes and strapped under the desiccator. An adjacent area was similarly treated with a water control. In one subject both test areas were treated with distilled water as an additional control. In two experiments the cosmetic preparations were predried to constant weight and the anhydrous residues applied to the skin in an equivalent quantity. The data obtained are shown in Table 5.

TABLE V

Moisture Loss from Inner Surface of Forearm after Application of Various Cosmetic Preparations

Test Material	Subject	Moisture Loss in mg. Test Material	Control	Duration of Test	Effect On Moisture Loss
Water (control)	C.F.	16.0	16.4	3 hrs.	Nil
Night Cream "A"	J.T.	52.5	60.1	5 hrs.	12% reduction
Moisturizing Lotion "B"	F.M.	21.9	22.4	5 hrs.	Nil
Moisturizing Lotion "C"	F.M.	19.8	19.9	4 hrs.	Nil
Anhydrous Lotion "C"	J.T.	46.0	41.9	4 hrs.	10% increase
Cationic Hand Lotion "D"	R.C.	25.2	19.5	4 hrs.	29% increase
Anionic Hand Lotion "E"	C.K.	16.0	16.5	3 hrs.	Nil
Anhydrous Hand Lotion "E"	C.F.	84.3	77.4	6 hrs.	9% increase
Barrier Cream "F"	C.K.	14.2	17.4	2 hrs.	18% reduction

The commercially successful moisturizing lotions "B" and "C" and the anionic hand lotion "E" had little if any effect on the rate of moisture loss from the skin.

It is possible that individual ingredients in these moisturizing lotions or hand lotion would have had a marked effect on moisture loss when applied alone. However when applied in aqueous emulsion with powerful emulsifiers the final lotion had little effect on increasing the skin's moisture level in these particular tests.

Night Cream "A" was perhaps surprising in that it only gave a 12 per cent reduction in the rate of moisture loss. Night creams as a rule are generally high in fat content and from the data in Table 2 on single ingredients one would expect at least a 20-30 per cent decrease in the rate of moisture loss. Here again the emulsifiers' system may well conteract the occlusive effect of the oils used.

Barrier Cream "F" indicated an 18 per cent decrease in the loss of moisture, and possibly would

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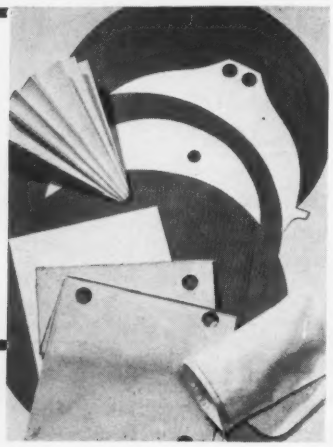

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cause an increasing water content of the stratum corneum. The effect of the cationic hand lotion was most striking. This particular emulsified cationic system containing an humectant and cationic emulsifier gave a 29 per cent increase in the rate of moisture loss. It is quite clear that the effect of any emulsion cream or lotion cannot be predicted from tests run on the individual components. This new study on living intact skin is particularly interesting as a new means of studying just how a cream or lotion affects the moisture content of the skin.

Summary

1. A method has been described for measuring rate of moisture loss from living skin.

2. Several raw materials frequently used in cosmetic preparations have been studied for their effect on the rate of moisture loss from the skin.

3. The effect of scrubbing the skin with a few detergents on the rate of moisture loss has been studied.

4. The effect of several commercial Cosmetic Preparations on the rate of moisture loss has been studied.

5. The rate of moisture loss from the skin can be retarded or accelerated by treatment with selected compounds, but the effect of these compounds in emulsion systems cannot be predicted at this time.

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World Congress of Gastroenterology

The World Congress of Gastroenterology is to meet in Washington, D. C. starting May 26. Symposia are: Peptic Ulcer, Intestinal Infections and Infestations, Malabsorption, Nutrition and its Effect on the Liver and Pancreas, and Gastric Carcimona.

(*Continued from page 157*)

employed in other countries because it would be presumptuous," these poorer countries which do not have the laws to prohibit such "dumping" cannot understand why we permit the sale of drugs to their importers which are not considered fit for sale in the U.S.A. What is unfit for us, certainly cannot be good for them, they argue. Hence the Latin American pharmacists are looking desperately for more basic studies on their needs, but are not willing to accept hastily drawn up standards by a small group of Latin American physicians and the industry of but one of 22 countries involved.

The Latin American pharmacists are seeking ways in which they can work with and cooperate with the Confederacion, as evidenced by a Resolution passed at the Fourth Pan-American Congress of Pharmacy and Biochemistry which reads as follows:

"CONSIDERING: The views expressed during the sessions of the Section on Pharmacy Laws and Ethics concerning effective cooperation between the Pan American organizations of physicians and pharmacists, with a view to obtaining better understanding of the common problems affecting both professions, . . .

The Fourth Pan-American Congress of Pharmacy and Biochemistry

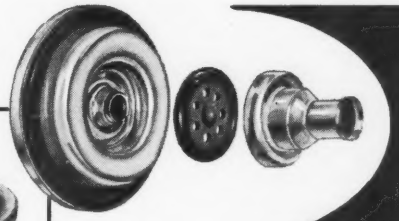
"RECOMMENDS: That the Pan American Pharmaceutical and Biochemical Federation be represented in the conventions of the Pan-American Medical Confederation by a delegate in the capacity of observer, and welcome representation of the Pan-American Medical Confederation in our Congresses."

Despite this offer of cooperation the Secretary-General of the Confederacion, continues to insist that the unification of drug laws in the Western Hemisphere can only be obtained through the exclusive efforts of "Latin American medicine and of the U. S. pharmaceutical industry."[3]

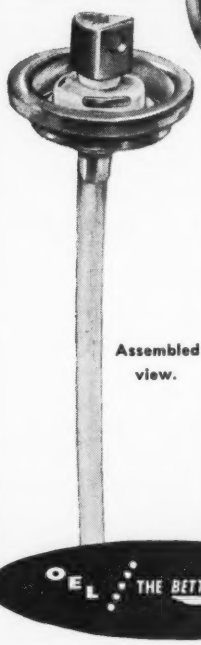
It is not hard for me to see how this continued stand by the Confederation will bring about resentment from all segments of the pharmaceutical profession throughout Latin America. It is my personal belief that any general acceptance by the U. S. pharmaceutical industry of the recommendations made by the Confederacion will only serve as "fuel" for the split between the physicians and pharmacists in many Latin American countries, and will also serve as a source of antagonism against U. S. pharmacy by our Latin American pharmaceutical colleagues.

I would not think that the U. S. pharmaceutical industry would want to get into the middle of a fight between a Latin American Medical Association (which does not really represent physicians of all Latin America) and the pharmacists of Latin America. Instead, I would think the U. S. industry would want to maintain the goodwill of both the medical

Exploded view of OEL Aerosol Valve.



Positive operation ... no clogging with the OEL AEROSOL VALVE



Assembled view.

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1. Faster filling in pressure loading.
2. Minimum propellent loss.
3. Uniform flow rates due to "above-the-valve" control.
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5. Simplified inventory control due to universal valve.
6. Mechanical break-up dispensing at no premium.

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and pharmaceutical professions throughout the Western Hemisphere.

As though all of this does not confuse the picture enough, other recent actions of the Pan-American Medical Confederacion has further antagonized pharmacists and certain phases of the pharmaceutical industry. One of these actions was the open letter which the Pan-American Medical Confederation published in the San Jose, Costa Rica newspaper *La Republica* this Spring[3] urging the Union Medica Nacional of Costa Rica to continue its fight with the pharmaceutical manufacturers for an "office call fee" from detailmen of pharmaceutical manufacturers.

Insofar as the basic problem of obtaining greater uniformity of drug standards is concerned, these recommendations originated long before the Confederacion or their Cooperating Committee was even thought of.[4] As early as 1923 the Fifth International Conference of American States recommended to the American countries the early adoption of uniform legislation with respect to food and drugs. A detailed history of this was presented to the Fourth Pan-American Congress of Pharmacy and Biochemistry, by Dr. Fred L. Soper, Director of the Pan-American Sanitary Bureau.

The Pan-American Sanitary Bureau is now intiating a study of the problems associated with the inscription, registration and distribution of drugs. According to Dr. Soper, this survey, which was authorized by the Pan-American Sanitary Organization Directing Council in September, 1957, will be made by "an expert who is highly competent and experienced in this field, and will be carried out country by country." The Bureau is, according to Dr. Soper, considering the establishment of a representative advisory expert panel or group to help ensure that the survey most effectively serves the purpose. "The careful survey when completed will provide the essential information on the needs for remedial action, as a basis for the plan of action," concluded Dr. Soper.[5]

What then does the U. S. pharmaceutical industry need to do now? I would think that the industry through their representative organizations would want to review carefully the entire situation, and as soon as possible enter into consultation with the U. S. representatives to the Pan-American Sanitary Organization. I would think that all of the individuals or groups who are or have been working independently on related phases of the problem should be coordinated so that the "left hand knows what the right hand is doing."

Most important of all, I would think, now that the key officers of the Pan-American Pharmaceutical and Biochemical Federation are U. S. pharmacists, and the Secretary-General even represents a leading U. S. pharmaceutical manufacturer, the industry would turn to the Federation in an attempt to determine the position of Latin American pharmacy, as it has turned to the Pan-American Medical Confederacion for the position of Latin American physicians. If there needs to be a Cooperating Committee, I would think that it would be appointed by industry through the A.P.M.A. and A.D.M.A. and would represent the Pharmaceutical and Biochemical Federation, as well as the Medical Confederation, with both organizations represented on an equal basis. Only by this means can we expect to obtain true "cooperation" between all segments of the health professions.

After listening to this detailed account of but two of forty-one resolutions which were passed during the Fourth Pan-American Congress of Pharmacy and Biochemistry, one might get the idea that perhaps all of the Resolutions were controversial or "hostile." This is of course not the case. Even the most critical report of the Congress admitted that "other Resolutions adopted indicated that Latin American and U. S. pharmacists think along the same lines." For example the Section on Pharmaceutical Education recommended and urged that "basic minimum pharmacy curriculum be instituted in all the universities in the Americas" and "that a seminar be held soon in order to determine the philosophy of teaching and the objectives of higher and technological education." The Section on Historical Pharmacy and Historical Biochemistry recommended that "a Museum of the History of Pharmacy be established in every country of the Americas." The Section on Pharmaceutical and Biochemical Journal Editors recommended "to the Pharmaceutical industry that it give effective, continuous and unrestricted cooperation to enable the pharmaceutical press of the Americas, to carry out its . . . professional mission."

The Section on Pharmacopeias and Formularies resolved that "the World Health Organization be commended and encouraged to continue its work toward the establishment of proposed specifications and of appropriate tests for pharmaceutical preparations." The Section on Pharmacy Laws and Ethics declared "that the pharmacy, should restrict its activities to commercial transactions concerned with medicine," and that the pharmacy is "the only entity that has the scientific and technical qualifications to dispense medicines." The Section on Pharmacy Laws and Ethics also directed a resolution to the various governments of the American States recommending "that the pharmacy divisions of the respective ministries of public health be accorded proper rank . . ."

Aside from the Resolutions, and the associated discussions, a great many other advantages were gained by the Congress. Improved relations with leading pharmacists from every country of the Western Hemisphere resulted from the sincere hospitality which the U. S. pharmaceutical manufacturers extended by making the Congress social events financially possible, by separate hospitality rooms during the Congress and by greeting the visitors at the plants

following the Congress. Many phases of U. S. pharmacy were admirably explained during the many sessions, Sectional and Plenary alike—and this information will be further disseminated through many foreign pharmaceutical publications as our Latin American colleagues return to their homelands. Most important of all, we have learned a great deal more of the meaning of true "Pan-Americanism" by person-to-person contacts.

Yes, we have learned a lot from the Congress; let's not lose the initiative which we have now gained by either inactivity or by lack of coordination of the one or two points where we may yet differ or by taking sides in national inter-professional disputes. Let us use this knowledge not as the terminating point of an affair which we shall not be confronted with again for another 66 years, but let us move forward to gain even better international understanding to unite our profession across international boun daries at a time when closer bonds are not only desirable but essential. Let the U. S. pharmaceutical industry marshall the forces of pharmacy in our country now so that a unified delegation can be sent to the Fifth Congress which will be held in Chile in 1960.

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5—For a detailed account of the P.A.S.B. Project, see Document CD 10/20 (English) of the Pan American Sanitary Organization X-IX Meeting September, 1957.

TEMPORARY HAIR COLORING

(Continued from page 159)

evaporation of the volatile solvent. The acid crystals are weighed into a horizontal ribbon blender (stainless steel or glass-lined). The perfume, lanolin derivative, plasticizer, and colors are mixed with the alcohol or acetone. The color solution may be sprayed onto the crystals or may be dripped on while the blender is in operation. Spraying may be done by a series of fixed spray guns feeding from a central reservoir on the cover of the blender. After the crystals are thoroughly wetted by the dye solution, the mixing is continued for one hour in a stream of heated air. This is done by blowing air through the mixer by means of a slow speed blower equipped with nichrome heating coils or by placing a bank of infra-red lamps about six inches from the bottom of the blender. The cover should be provided with one or more cylindrical chimneys, 6″x24″, to permit the escape of the solvent. Explosion-proof motors and

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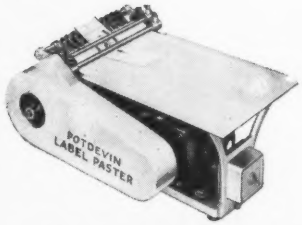

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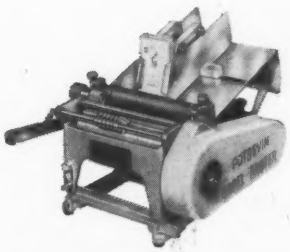

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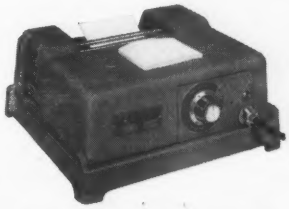

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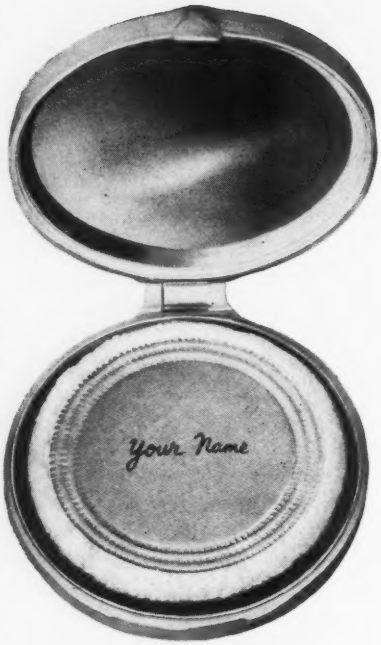

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other equipment are absolutely required in this process. Open flames or an accidental spark will cause the launching of "Cosmetniks" to join "Sputnik" and "Muttnik" in outer space. When all of the solvent has evaporated, heat is discontinued and mixing continued until the color is uniform. Store the finished product in polyethylene-lined drums.

Because of the hygroscopic nature of the product, water-proof or water-repellant packaging should be used. Materials include laminated glassine, saran, saran-coated foil, polyethylene or polyethylene bonded to glassine, foil or paper. The film is formed into packets or envelopes on fully automatic or semi-automatic equipment which fills 8 to 15 grams of the crystals into the container and crimps or heat seals both ends. Packets should be tested by immersing a number of them in warm water and required changes be made in the sealing operation.

Concentrated liquid rinses are creamy, colored emulsions to be diluted before use to condition the hair while tinting it. They consist of acid-stable emulsifying agents along with a modified lanolin, perfume, buffer and the proper colors.

Ammonyx 4[1]	*25.0*
Polawax[2]	*0.5*
Tegacid regular[3]	*6.5*
Lanogel 41[4]	*1.0*
Perfume	*0.5*
Urea	*5.0*
F. D. & C. Violet No. 1	*5.0*
Water	*156.0*
F. D. & C. Blue No. 2	*2.0*
Nigrosine	*10.0*

The formula is given as parts by weight; by the use of proper color combinations, a full range of shades may be developed.

The Ammonyx, Tegacid, Lanogel and Polawax are heated together to 80°C. Half of the water is heated to 85°C. with the urea. The rest of the water is mixed with the certified colors and heated to 70°C. The urea solution is slowly poured into the melted fats with constant agitation and allowed to mix until the temperature drops to 70°C. The dye solution is added and mixing continued until the temperature reaches 45°C., when the perfume is added. Continue agitation with external cooling until room temperature is reached. Fill cold, using low vacuum in the filler.

1. Onyx Oil & Chemical Co.
2. Croda, Inc.
3. Goldschmidt Chemical Corp.
4. Robinson Wagner Company, Inc.

THE PERFUMER

(Continued from page 163

hairs that are in apparently continuous motion. It is believed that these cells have various receptive powers which enable them to differentiate odors, but this has not yet been proven by histological (tissue study) means. Enzymes are also thought to play an

important part in the mechanism of odor perception. A number of theories explaining the function of the olfactory epithelium have been offered, but none so far has been satisfactorily demonstrated, largely because of the tremendous experimental difficulties involved.

The sequence of events involved in smelling is generally conceded to be as follows: An odor (actually molecules of a substance exuded from a surface) is brought into contact with the olfactory epithelium of the nose by an air current. The odor registers an effect on this center by physicochemical stimulation. This registration is transmitted by the olfactory nerve to the olfactory bulb of the brain which in distributes these registration impulses to the olfactory areas where they are discerned.

The temperature of the air current, within the range of human comfort, does not appear to have much influence on the efficiency of the sense of smell. The humidity of the air, however, does have an appreciable effect, probably because of the diluting effect it has on the mucous surface of the epithelium. Whatever the explanation, high humidity decreases the acuteness of the sense of smell. In rooms air-conditioned by a non-recirculating system the optimum conditions for good smelling are 80 degrees Fahrenheit temperature, and 40 percent relative humidity.

The nose is surprisingly responsive to an increase in the pressure of the air current flowing through the nasal passage. This pressure factor has long been known to the "sand-hogs" in a tunnel-digging project, who work in an atmosphere with considerably increased pressure. They find that, under these pressure conditions, the normal body odors become almost intolerable. This extreme situation is, of course only of academic interest to the perfumer since it would not be encountered in his ordinary work.

However, even small increases in atmospheric pressure (a few ounces) can cause an appreciable gain in the olfactory response. Such a condition could be encountered in an industrial re-odorant problem, where ventilating air was being transmitted by high velocity blowers, such as might be found in large ventilating systems. There is mounting evidence that some of the peculiar distortions of industrial fragrances, when used in these applications, are due to the increase in olfactory sensitivity stimulated by the slight elevation in atmospheric pressure. Apparently this augmented sensitivity causes an abnormal recognition of certain fragrances, creating an apparent imbalance in the overall fragrance effect. Esters, as a chemical group, seem to be specially prone to this abnormal recognition.

The inhalation of minute quantities of amonia has been a favorite and successful procedure for the periodic "freshening' of the sense of smell. However, excessive use of ammonia can produce a kind of

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anesthesia that in some people may last for several hours. It is interesting to note that the effect of an excess of ammonia can usually be quickly eliminated by inhaling a trace of ethyl formate. Since the formic esters are by far the most chemically reactive of the ester series, a theory has been advanced that ethyl formate functions by reacting with the free ammonia fixed on the olfactory area, to form the neutral and odorless formamide. Since it is highly volatile, it does not leave a persistent odor to interfere with further smelling.

Ozone has a definitely beneficial influence on the sense of smell of at least 75 percent of the people. It does not appear to stimulate the olfactory sense, but rather helps to maintain at a high level of sensitivity for a longer than average time. The use of a small portable high voltage, electric ozonator in a perfume laboratory is so effective that in the design of a large air condition system for a group of laboratories, the controlled ozonisation of the processed air should be carefully considered.

The effects of certain drugs such as cocaine should also be noted. Individuals with sinus troubles who have had their nasal passages treated with diluted cocaine solution know how peculiarly and intensely their perception of odors is increased. This circumstance is mentioned because the chemical analogues of cocaine (the novocaine series) are occasionally encountered in medical aerosol sprays.

Some very interesting experimental work has been done with the novocaine group as olfactory stimulants to increase the efficiency of the re-odorants in the various room deodorizing sprays. However, the risk of inviting a full scale investigation of these (and perhaps all) aerosol room sprays by the Food and Drug Administration is so great that perhaps this field is best left alone. The Food and Drug Administration would have the best possible argument for an investigation, since these novocaines are clearly classifiable as drugs. Furthermore they are practically odorless, so that no authentic claim could be made for their use as perfume ingredients.

Most of the smelling done by the perfumer is accomplished by dispersing a drop of the fragrant material under examination on a small piece of blotting paper. By wafting this test paper under the nose, a small quantity of the fragrance is transferred into an air current, and thence into the nasal passage to the receptors in the olfactory epithelium.

Most perfumers prefer a stiff strip of blotting paper about ¼ inch in width and 4 inches in length. The blotter should be dipped into the fragrance liquid to a depth equal to its width. This depth of "dip" allows the quick and uniform distribution of the liquid throughout the tip of the blotter. The liquid should be completely absorbed before the blotter is placed under the nose.

The act of holding the blotter under the nose is

not quite as simple as it sounds. A curious phenomenon, equivalent to right-handedness or left-handedness in writing is involved. Right-handed people seem to smell best through the left nostril, whereas left-handed people smell best through the right nostril. Ambidextrous people find little, if any, differential in smelling through either nostril. The student should consistently use that nostril which is most effective for him.

Odor fatigue, physical exhaustion of the sense of smell, is a phenomenon connected with the physiological mechanism of olfaction. In some manner not clearly understood, during the state of fatigue the image of an odor remains impressed for an abnormally long time on the sensory apparatus, so that it blocks out the perception of subsequent odor impulses received during this abnormal period.

Odor fatigue is extremely annoying to the perfumer, as it temporarily puts him out of action. Some individuals whose sensory receptors are readily saturated are more quickly susceptible to fatigue than others. The onset of fatigue, usually recognizable by a diminishing ability to differentiate odors, is brought about in two ways: the prolonged smelling of a single odor type, and the smelling of certain chemicals. The ionones are notorious for the speed with which they will produce this kind of fatigue. The onset of fatigue may be substantially delayed by the continuous introduction of a minute quantity of ozone in the smelling room.

The inhalation of traces of diluted ammonia vapors will speed up the restoration of the sense of smell after fatigue. In fact some perfumers use this procedure systematically, as a prophylactic treatment during the course of their working day.

The most satisfactory method of avoiding odor fatigue is to eliminate or control its cause. A practical procedure is to conduct as much of the preliminary experimental work as possible with standardized, dilute solutions of aromatic materials. A separate, small laboratory equipped with dropper-type bottles of aromatic materials in 10 per cent diethyl phthalate solution can be maintained. By working on a drop-counting basis a great number of experiments can be performed without taxing the sense of smell and bringing about fatigue.

When an approximate formula has been "roughed in" with this dropwise procedure, the counted drops are translated into unit weights and the formula established mathematically. This formula is then prepared in the regular laboratory with straight aromatic chemicals after which perfecting adjustments are made.

Using this procedure, at least 75 percent of the basic experimental work of a formula can be accomplished with diluted materials, thus minimizing the major cause of odor fatigue. Better still, this method will increase the effective working time of the per-

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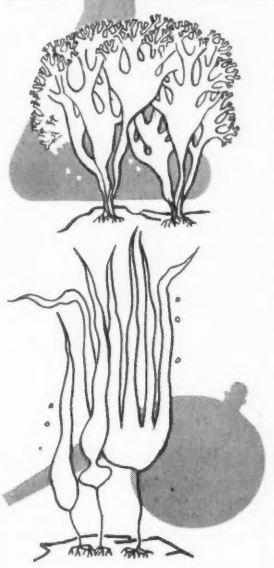

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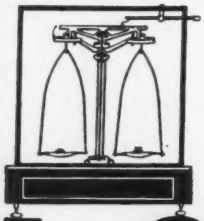

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fumer's sense of smell and therefore his work output.

An appreciation of the artistic possibilities of single aromatic chemicals is an essential acquisition for the student perfumer. This appreciation should not be confused with the more complex placement of these aromatic materials in the various basic fragrance classifications. Rather, it involves the realization of these aromatics as useful fragrance materials, not "stinking chemicals" as the layman so often describes them.

This appreciation is acquired by irksome practice somewhat comparable to the daily "scale exercise" of the musician. A successful self-instruction procedure is to select five different aromatic materials to be systematically smelled during the course of each day, using the blotter technique previously noted. This procedure establishes the groundwork for the development of the odor memory and the ultimate placement of these aromatica in the various fragrance classifications.

The perfumer should approach this acquisition problem with an open mind. He should allow his appreciation to develop freely and naturally, with no interference from preconceived ideas of other individuals. When he has acquired this appreciation it should be "his" in every sense of the word. Failure to do this may cause the subsequent stages of learning to be unnecessarily difficult.

It is interesting to note that many perfumers of long experience often automatically pass each bottle of raw material under their noses before using it, as a constant "refresher" of their basic memory.

It is a curious phenomenon of perfumery that intensely disagreeable or repulsive odors may become surprisingly flowery, even sweet, when diluted with solvents or when exposed to air.

Civet, indole and skatole are nauseating to the layman when smelled for the first time. Yet when they are diluted in alcohol, they become extremely flowery. In fact a good jasmin fragrance cannot be made without some member of this group.

Castoreum, with its leathery, smoky, animal note is not at all attractive in its free state. Yet it adds a surprisingly velvet richness to flower fragrances, especially tuberose. Traces of castoreum immensely improve many fantasy bouquets.

In another odor class, galbanum oil which is intensely "green" and disagreeable in its pure state, yet when it is diluted, it acquires a lilac-hyacinth freshness.

Pyridine and its chemical homologs, with their unpleasant ammoniacal odors, are not attractive in their pure form. When they are diluted they acquire a musk-like sweetness. In fact they are the basis for many artificial musk compositions.

The perfumer should carefully evaluate unpleasant odors as part of his learning program, for if at

some time in the future he is asked to evaluate a new chemical, this experience may be valuable.

The need for a careful appraisal of new chemicals with apparently unpleasant odors must be emphasized at this point, because the new field of industrial perfumery increasingly makes use of chemicals that were formerly rejected because of so-called "unpleasant" odor reaction.

When the student perfumer has studied the above five points and can honestly say that he appreciates the fragrance possibilities of the various aromatic materials, then he is ready for the next step in his training, the building of an odor memory.

Memory is the mental recollection of sensations experienced in the past. One of the disconcerting discoveries which the student perfumer makes occurs when he appraises his odor memory for the first time. He suddenly becomes aware that most of his olfactory memory consists of vile, pungent and penetrating smells, with very few pleasant odors included. The foregoing training suggestions for acquiring appreciation are intended to lay the groundwork for building up pleasant odor memories.

Of the memory mechanisms associated with each of the five senses, the visual memory is by far the most highly developed. Its influence extends far beyond its conventional domain, and plays an important part in the identification of odors. For example, it is amazing to see how many people, if blindfolded and asked to distinguish a rose from a carnation, are confused and can only hazard a guess as to the identity of each flower. This is because they are dependent on their visual memory for recognition of an odor.

If an individual were permitted to see and smell each flower before being blindfolded, the chances are that he would make the correct identification since the fragrance of each flower would have been associated with a mental picture.

A variation of the visual association demonstrated above is the basic principle employed in building an odor memory for fragrances. As the student perfumer continues in his study of the various odors (both single and complex) he will gradually discover that with each odor stimulation his mind will form specific mental pictures or geometric figures. He should encourage and fix these pictures or forms in his visual memory by concentrating upon them and repeatedly subjecting himself to the stimuli producing them. The student should not regard the bizarre shape and color in which these picture-forms often appear as mild mental aberrations, but rather as normal psychological experience.

These picture-forms begin to arise only after a series of stimulations by each odor. Their origin appears to be completely spontaneous. The task of the student is not to question the nature or origin of these forms, but to promptly take advantage of them

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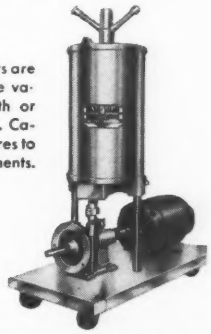

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by imprinting them on his visual memory, making certain each time that they are correctly associated by name with their odor stimulus.

When at a later date he is required to examine a mixture of unknown materials, as is the case in matching a fragrance, the mental appearances of these forms will furnish him with clues as to the identity of many of the materials present. This method cannot give a complete analysis of a fragrance because of the obvious complexity of an elaborate mixture, but it will give a remarkably good "view" of its principal components or "top notes."

It is astonishing to see how effective properly cultivated psychological associations are in actual practice. The majority of the fabulous "noses" in perfumery employ this method or some personal variation of it, as a means of identifying odors. Strangely, many of its users are not clearly aware of the mechanism.

The second phase in the building of an odor memory is the faculty of being able to recall a single odor (or a complete fragrance) at will. This is comparable to the musician's ability to run over a melody in his mind and virtually "hear" it. The skilled perfumer can often so vividly recall an odor that it seems to be right under his nose.

There is no known system to develop this faculty. It appears spontaneously after much experience; it is the most difficult part of the odor memory to develop, and the easiest to lose by disuse or carelessness. Once this faculty has made its appearance, it should be maintained at peak efficiency by a systematic, daily, "recall" practice session involving a few selected odors. Because of the monotony of this procedure, the perfumer must discipline himself against the tendency to neglect it, otherwise this valuable faculty will gradually decline.

As seen from the previous discussion, the odor memory is divided into two parts—identification and recall.

The "identification" phase is concerned with the recognition of odors and the analysis of complex fragrance effects. It is used to classify the fragrance effect under observation as to type, to pick out as many of the major components as possible. This procedure furnishes the basic information upon which the process of duplication of a fragrance begins.

The general fragrance classification is usually readily identified, but the individual components can be identified only after concentrated effort over a considerable length of time. The imperfections of this system are shown in the fact that only rarely can a good match be made of a given fragrance. A good approximation is ordinarily the best that can be done.

The "recall" phase is primarily concerned with creative perfumery. It is the mechanism by which the perfumer visualizes his ideas before translating them into reality. Its operation can be illustrated by

an example of flavor combination: If the average person were asked how he would like vanilla ice cream with a sauce of chopped onions, he would squirm with revulsion at the thought. Yet undoubtedly he has never tried this combination to verify its taste by personal observation. His reaction towards the mixture is based upon his memory of the two materials and his power of intensely visualizing their compatibility in his mind. In a somewhat similar manner the practicing perfumer employs the recall phase of his odor memory as a comparative guide for creating combinations that are pleasing and avoiding those that are not.

FLUORIDES AND THE SOLUBILITY OF POWDERED TOOTH ENAMEL

(Continued from page 161)

will react with fluoride ions to form fluorapatite or calcium fluoride. The resulting fluoride-containing layer is more resistant to acid than the original enamel surface[32]. By using powdered enamel of a specified particle size range and controlling reaction time, concentration of reagents, temperature, source of enamel and rate of stirring, the decrease in solubility produced by fluorides can be measured with good reproducibility. The *in vivo* significance of these results will not be evident until adequate correlation with appropriate clinical studies has been made.

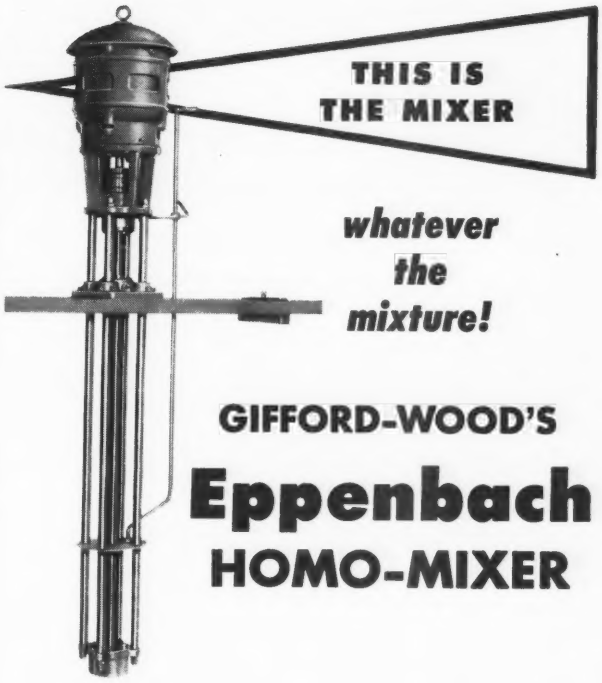
Procedure

a—Preparation of Dental Enamel

The roots of extracted human teeth which had been stored in 5 per cent formaldehyde solution are removed mechanically and the crown sections shaken in a 5 per cent solution of Oronite NIW for 24 hours. The crowns are then brushed with a tooth brush and washed thoroughly with water. Reasonably clean crowns free from fillings or cavities are selected, dried, and cracked in a diamond mortar. The major portion of the dentin is removed by sorting and the remaining fragments ground until they pass through a 30-mesh screen. About 90 per cent of the dentin is removed from the ground material by flotation in a mixture of bromoform and acetone of specific gravity 2.70. The heavier material, which represents almost pure enamel, is then ground finer in a diamond mortar. The enamel that passes through a 100-mesh screen but is retained on a 200-mesh screen is then further purified by flotation in pure bromoform using the technique of Manly and Hodge[33]. The resulting enamel is washed in acetone and distilled water, dried at 105°C. and stored in a dessicator until used.

b—Treatment of Enamel

A sample of enamel weighing 0.1300 ± 0.0005 gram is added to a 50 ml. round bottom tube having an inner diameter of about 1 inch. Twenty-five (± 0.2) grams of the solution to be tested are added and



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the tube immersed in a water bath maintained at 37.0 ± 0.1°C. The contents of the tube are agitated, using a top-entering glass stirrer, for exactly 60 minutes. The stirrer is adjusted so that all enamel particles are in constant motion without any apparent settling when distilled water is used to set the speed of the stirrers. After the treatment is completed, the contents of the tube are washed onto a 200-mesh screen and rinsed with 500 ml. of distilled water.

The enamel is then transferred to a 100 ml. beaker with a stream of distilled water. The distilled water is decanted, 50 ml. of fresh distilled water is added, and the enamel is allowed to soak for 20 minutes. The decantation and replacement of distilled water are repeated twice more. After a total washing time of 1 hour, the water is decanted as completely as possible, and the treated enamel dried for exactly one hour at 105°C. Occasionally during the washing the enamel has a tendency to float. In such cases, the water is decanted through a 200-mesh screen to minimize loss of enamel.

c—Solubility of Enamel

One hundred (± 0.2) milligrams of the dried, treated enamel is added to a 50 ml. round bottom tube which is then placed into a water bath maintained at 37.0 ± 0.1°C. A top-entering glass stirrer is positioned in the tube and started. Twenty-five ml. of 0.2 M. acetic acid-sodium acetate pH 4.0 buffer at the temperature of the water bath are added rapidly to the tube. Thorough agitation is maintained for 19½ minutes, after which the stirrer is stopped and the enamel is allowed to settle. Exactly 20 minutes after starting the addition of the buffer solution, a 10 ml. sample of supernatant liquid is withdrawn from the tube into a 250 ml. Erlenmeyer flask containing 2 ml. of the ammonia-ammonium chloride buffer described below.

d—Determination of Calcium

1—REAGENTS

a)—*E.D.T.A. Solution* (0.005M):2.0 grams of the disodium salt of ethylenediamine tetra-acetic acid dihydrate (reagent grade) and 0.1 gram of $MgCl_2 \cdot 6H_2O$ (reagent grade) are dissolved in distilled water and diluted to one liter. The E.D.T.A. solution is standardized using 25 ml. of a solution of Iceland Spar (about 0.005M in Ca++) previously standardized gravimetrically by means of ammonium oxalate.

b)—*Buffer Solution:* 67.5 grams of NH_4Cl (reagent grade) are dissolved in 570 ml. of concentrated NH_4OH (reagent grade) and diluted to one liter with distilled water.

c)—*Indicator Solution:* 0.5 gram of Chromogene Black EtOCF (General Dyestuff Corp., 435 Hudson Street, New York, N. Y.) and 4.5 grams of hydroxylamine hydrochloride, C.P., are dissolved in 100 ml. of anhydrous methyl alcohol.

2—TITRATION PROCEDURE

To the Erlenmeyer flask containing the mixture of 10 ml. of sample and 2 ml. of buffer, are added 50 ml. of distilled water, 2-3 ml. of distilled water saturated with H_2S, and three drops of indicator solution. The resulting wine-red solution is titrated with the 0.005M E.D.T.A. solution to a blue color which persists for at least 30 seconds.

Enamel Solubility Test Variables

All variables including the amounts of enamel and treatment solution, the rate of stirring and the washing and drying periods used in the preparation of the treated enamel have been standardized to minimize the effects of alterations in these variables on the solubility results.

The determination of calcium by E.D.T.A. is not affected by the presence of phosphate ions if the ratio of $HPO_4=/Ca++$ is below three. Since tin interferes with the calcium analysis, hydrogen sulfide solution is added before the titration is begun as a precautionary measure.

The calcium determination is not affected by the presence of enamel particles inadvertently pipetted into the titration vessel. The precision of this determination is high if the same batch of enamel is used. Approximately 5-10 mg. of calcium are dissolved during the decalcification step. On the basis of over 60 replicate determinations the standard deviation was found to be 0.05 mg.

Effect of Variations in Enamel

The acid solubility of powdered enamel is dependent on the type of teeth used for its preparation. The variations obtained using three different sources of enamel are presented in the following table.

Solubility of Enamel from Different Sources

Enamel Source	Mg. Ca++ Dissolved
Bicuspids and Molars	9.72
Lower Incisors	7.71
Molars	9.31

The incisor enamel was less soluble in acid than bicuspid or molar enamel. It is obviously necessary to prepare a large batch of enamel at one time so that valid comparisons can be made during the course of a large number of experiments.

Effect of SnF_2 and NaF at Various pH Levels on Enamel Solubility

The comparative effectiveness of sodium and stannous fluorides in reducing the solubility in acid of powdered enamel was determined. The solutions utilized contained 250 ppm of fluoride and were adjusted with NaOH or HCl to pH levels ranging from 2.5 to 9.0. All of the stannous fluoride solutions which were more alkaline than pH 2.9 contained precipitated basic tin salts. The results of the solubility experiments are presented graphically in Figure 1. At pH levels between about 3 and 9, sodium fluoride was

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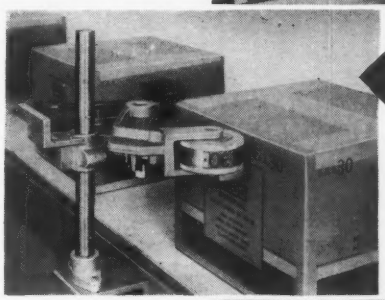

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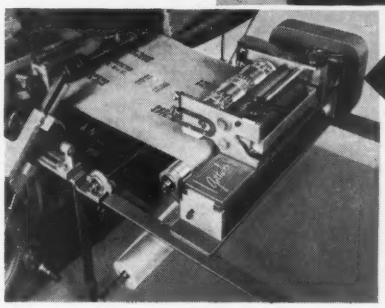

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slightly more effective than stannous fluoride in reducing the enamel solubility in acid. This may be due to the slightly lower soluble fluoride content of the stannous fluoride solutions because of precipitation of basic tin fluoride salts. At pH levels below about 3, a sharp increase in the effectiveness of stannous fluoride was observed while the protective activity of sodium fluoride showed little further increase.

During the course of these studies, it was noted that the pH of the acidified sodium fluoride solutions increased substantially during the one-hour reaction with tooth enamel. On the other hand, the pH of the stannous fluoride solutions showed no significant change. The data for sodium fluoride are presented in the following table:

Change in pH of NaF (250 ppm F—) Solutions in Contact with Tooth Enamel for 1 Hour

Initial pH	2.46	3.38	4.50	5.80	6.67	6.99	8.79
Final pH	3.97	5.55	6.29	6.87	7.15	7.36	7.62
Difference	1.5	2.2	1.8	1.1	0.5	0.4	—1.2

The increase in pH, in the case of sodium fluoride, can be accounted for by the formation of fluorapatite and an equivalent amount of hydroxyl ion. The precipitation of stannous hydroxide, in the case of stannous fluoride, prevents a pH rise.

Since the solubility of enamel in acid decreased as the pH of the sodium fluoride treatment solution decreased and the pH of the treatment solution increased during the treatment, additional studies were made in which the sodium fluoride solutions were buffered to minimize pH changes. By this means, greater reductions in enamel solubility could be expected. Sodium fluoride (250 ppm F—) solutions were prepared in 0.2M acetate buffers at pH's from 3 to 7.25 and used to treat enamel as described above. The results are presented graphically in Figure 1. At all pH levels between 3 and 7.25, the buffered sodium fluoride solutions were more effective than the unbuffered sodium fluoride solutions or the self-buffered stannous fluoride solutions in reducing enamel solubility.

Effect of Fluoride Ion Concentration on Enamel Solubility

The foregoing experiments were conducted using a single concentration (250 ppm) of fluoride. The effect of varying the fluoride concentration was of interest and determined. Unbuffered solutions of sodium fluoride containing from 10 to 2000 ppm of fluoride at initial pH's of 5 and 6.5 were used to treat powdered enamel, following which the solubility in acid was determined. The results are presented graphically in Figure 2. It can be observed that the enamel protection rises rapidly until about 50 ppm F— concentration is reached and proceeds to increase though more gradually as the fluoride concentration is increased. At pH 5, there is an unaccountably

sharp rise between about 250 and 300 ppm of F—, which then levels off to a more gradual increase.

In view of the increased effectiveness observed for buffered solutions of sodium fluoride, an experiment was conducted using concentrations of sodium fluoride up to 500 ppm F— in 0.2M acetate buffer at pH 5. The results are presented graphically in Figure 2. It can be observed that the enamel protecton rises rapidly until about 10 ppm F— is reached, levels off somewhat between 10 and 100 ppm F—, rises rapidly up to 150 ppm and continues to increase fairly rapidly up to 500 ppm F—. This experiment points out, again, the advantages of buffered over unbuffered solutions of fluoride in the reduction of enamel solubility.

Repeated Decalcification of Fluoride-Treated Enamel

In the enamel solubility test described in this paper, the treated enamel is subjected to a single decalcification step. Since the results of the repeated decalcification of treated enamel may be more significant than those of a single decalcification, the effects of repeated decalcification on fluoride-treated enamel solubility were determined[30]. The ratio of the weight of enamel to the volume of decalcifying solution was kept constant for each successive decalcification.

Exactly 0.2080 gram of enamel was treated with 40.0 ml. of stannous fluoride or sodium fluoride solution (250 ppm F—), each buffered with 0.2M acetate buffer at a pH of 4.0 and the treated enamel decalcified with 0.2M acetate buffer at pH 4.0 as described previously. The undissolved enamel was screened, washed and dried before the next decalcification step. Enamel treated with distilled water was included as a control. Three successive decalcifications were performed on each sample of treated enamel. The observed reductions in enamel solubility are presented in the following table:

Enamel Solubility Reductions Effected by Buffered (pH 4) Sodium or Stannous Fluoride (250 ppm F—) Solutions

No. of Decalcifications	% Reduction in Enamel Solubility	
	Sodium Fluoride	Stannous Fluoride
1	59.5	62.6
2	56.2	40.8
3	50.8	29.6

The reductions in enamel solubility effected by the sodium or stannous fluoride using a single decalcification were essentially the same, 59.5 and 62.6 per cent, respectively. The solubility of the sodium fluoride treated enamel increased slightly during the second and third decalcifications. The solubility of the stannous fluoride treated enamel increased considerably with each successive decalcification. Thus, under the conditions used in this repeated decalcification test, sodium fluoride was superior to stannous fluoride in reducing enamel solubility. The lower effectiveness of the stannous fluoride solution may be

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due to the precipitation of a portion of the fluoride ion as a basic tin fluoride, thus lowering the effective fluoride ion concentration, and the coating of the enamel by the insoluble tin compounds, which prevents free access of fluoride ion with the enamel.

Topical Application of Sodium Fluoride

Since acidic sodium fluoride solutions are more effective than neutral solutions in reducing enamel solubility and buffered solutions exhibit maximum activity, it would be logical to use buffered, acidic sodium fluoride solutions for topical applications. Sodium fluoride (2 per cent) solutions, adjusted to pH 4 with hydrochloric acid, attack tooth enamel, hence, the use of this solution is contra-indicated. Recently, Brudevold et al.[34] in a study of the effect of different buffers on intact enamel, found that low molarity phosphates do not cause visible decalcification after three hours' exposure at pH 4.0, 4.5 and 5.0. With this observation in mind, the labial surfaces of four central incisors were exposed to 2 per cent solutions of sodium fluoride, one solution adjusted to pH 4 with hydrochloric acid, the other with orthophosphates (0.5M). After two hours of agitation at 37°C., the enamel surfaces of the teeth were unaffected. After four hours, the enamel treated with the phosphate-buffered fluoride solutions showed only a trace of attack, obviously less than with the pH 4 chloride-fluoride solution.

In view of the lesser tendency for the phosphate buffered fluoride solution to attack enamel, additional studies to determine the acceptability by topical application of phosphate buffered fluoride solutions at pH 4 and pH 5 are indicated.

Summary

A standardized procedure for determining the solubility of powdered enamel, before and after treatment with fluoride solutions, has been described. The method used takes into consideration the need for removing reagent precipitates and reaction products prior to the determination of the solubility.

The experimental observations confirm reports that the solubility of dental enamel in acid is reduced following application of fluorides and lead to the conclusion that the reduction of enamel solubility is dependent on the concentration and pH of the fluoride solution. Buffered acidic fluoride solutions are more effective in reducing enamel solubility than unbuffered solutions. At pH levels between about 3 and 9, sodium fluoride is slightly more effective than stannous fluoride in reducing enamel solubility in acid. Below pH 3, stannous fluoride is more effective than sodium fluoride.

The *in vivo* significance of these results will not be evident until adequate correlation with appropriate clinical studies has been made. Additional

studies to determine the acceptability for topical application of phosphate (0.5M) buffered sodium fluoride solutions at pH 4 and pH 5 are indicated.

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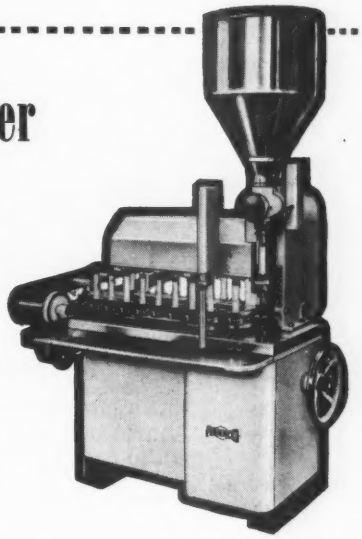

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(*Continued from page 165*)

methods. Therefore, this study was undertaken to determine the HLB of several natural emulsifiers: acacia[5], gelatin (Pharmagel B)[6], and tragacanth, and the semi-synthetic agent, methylcellulose (Methocel, 15 cps)[7].

EXPERIMENTAL

In order to obtain the HLB values for natural emulsifiers, emulsions of each agent were prepared in conjunction with a synthetic surfactant of known HLB and an oil of which the required HLB was known. The total concentration of emulsifiers was held constant for a particular series of emulsions, while the ratio of natural emulsifiers to surfactant of known HLB was varied to produce emulsions of different HLB values.

Determination of HLB. The method developed by Griffin (2) was modified somewhat in this investigation. The moisture content of the natural emulsifiers was determined using a Cenco Moisture Balance. The proper quantity of natural emulsifier, corrected for moisture content, was weighed on an analytical balance. The emulsifier was then dissolved in or distributed uniformly throughout the oil which had previously been weighed in a four ounce wide mouth bottle on a triple beam balance. When a Span[8] was used as the surfactant the proper quantity of a 25 mg. per ml. stock solution of Span in mineral oil was delivered by means of a burette into the oil. When a Tween[8] was used an aqueous solution of 25 mg. of Tween per ml. was likewise added. Then a sufficient quantity of water was delivered into the mixture so that the oil and water were present in equal quantities, bringing the total weight of the components to 100 grams.

Emulsification was brought about by intermittent shaking over a period of three days. Often the emulsions which appeared to be the best immediately after emulsification did not prove to be superior after standing for this time interval. Since the determinations were relative to one another in a given series, it was not necssary to standardize the number of times that the emulsions were shaken during the period, but uniformity of agitation among all the emulsions within a series was of the utmost importance.

It was not possible to determine the HLB of natural emulsifier systems of high concentration because these agents increased the viscosity of the emulsion to a point where the rate of phase separation[9] became negligible. Accordingly, the total emulsifier content was kept sufficiently low to allow separation at a rate indicative of the effectiveness of the emulsifiers. A total emulsifier content of 0.5 per cent was employed in all except the acacia emulsions, where it was necessary to use a total of 3 per cent to obtain a satisfactory product.

Series of emulsions were prepared in which the ratios of the natural emulsifier to surfactant were varied. The optimum ratio of the series was determined by noting the rate of phase separation with time. Figure 1 shows how the appearance of the emulsion samples was used for the selection of the best emulsifier ratio. In the initial determination for each emulsifier a rough estimate of the proper ratio was made by evaluating relatively large changes in the natural emulsifier-surfactant ratio. These changes in ratio were progressively diminished until it was no longer possible to determine which of two successive emulsions was the better because of their identical amounts of phase separation. Figure 2 illustrates how the ratio was successively decreased. The initial series (Trial 1) was prepared using a surfactant concentration of 0, 25, 50, 75, and 100 per cent by weight of the total emulsifier concentration. The emulsion corresponding to various ratios of the emulsifier are shown as open circles in Figure 2. Since the emulsions containing 25 and 50 per cent of surfactant proved to be equally good (represented by solid circles in Trial 1), a new series was prepared in that concentration range, and the natural emulsifier to surfactant ratio was varied in smaller increments (Trial 2). This procedure was repeated until the optimum ratio was obtained with small variation as shown in Trial 8. Usually, the variations in concentration could finally be reduced to increments of 2.5 per cent, i.e., a change in the ratio of surfactant to natural emulsifier of 1 to 40. A final series (Trial 9) of emulsions with HLB values including the entire range under consideration confirmed the choice of the best product.

When the optimum ratio of natural emulsifier to synthetic agent had thus been determined the HLB of the natural emulsifier was calculated using a modification of the formula proposed by Griffin (2):

$$\text{HLB} = \frac{R - (H \times S)}{N} \qquad (1)$$

where HLB is the calculated HLB of the natural emulsifier,

R is the "required HLB" of the oil,
H is the HLB of the surfactant (Tween or Span),
S is the weight percentage concentration of the surfactant in the total emulsifier expressed as a decimal fraction, and
N is the weight percentage concentration of the natural emulsifier in the total emulsifier expressed as a decimal fraction.

For example, the best mineral oil emulsion employing acacia and Tween 20 was produced when 67.5 per cent of the total emulsifier content was acacia and 32.5 per cent Tween 20. Tween 20 has an HLB value of 16.7 and mineral oil has a required

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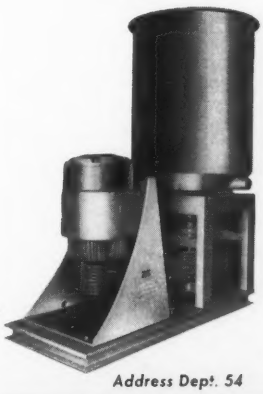

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HLB of 10.5 for an o/w emulsion. Substituting these values into equation (1):

$$\text{HLB} = \frac{10.5 - (16.7 \times 0.325)}{0.675} = 7.5$$

Thus, the HLB of acacia as determined in this particular series was 7.5.

1. Physical Pharmacy Laboratories, School of Pharmacy, Purdue University, Lafayette, Ind.
2. The concept of hydrophile-lipophile balance had been discussed by a number of other investigators, but it remained for Griffin to provide a numerical scale of values. See Sumner, C. G., "Clayton's The Theory of Emulsions and their Technical Treatment", 5th Ed. The Blakiston Co., Inc., New York, N. Y. 1954, p. 178.
3. Liquid Petrolatum, USP is heavy mineral oil that meets the specifications of "The Pharmacopeia of the United States", 15th revision, 1955. It will be referred to as mineral oil in this paper.
4. Although the natural and semi-synthetic emulsifiers may be considered as surfactants, they will be distinguished from the synthetic surfactants in the remainder of this paper by referring to them as natural emulsifiers while the synthetics will be termed surfactants.
5. The HLB of natural agents may vary depending on the source and processing of the material. The samples employed in this study were taken from single lots of U.S.P. grade products.
6. Pharmagel B is a trademark product of the Pharmagel Corporation, New York, N. Y.
7. Methocel is a trademark product of the Dow Chemical Company, Midland, Mich. Cps is an abbreviation of the absolute viscosity unit, centipoise, and the 15 cps designation refers to the viscosity of a 2 per cent solution of Methocel at 25°C.
8. Span and Tween are trademark products of the Atlas Powder Company, Wilmington, Delaware.
9. Phase separation here refers to creaming or to the separation of oil globules, or to a combination of these effects.

POLYETHYLENE OXIDE GUMS IN TOILET GOODS

(*Continued from page 167*)

the phthalyl glycolates, as well as such chlorinated hydrocarbons as the polychlorinated polyphenyls.

There is no tendency toward biological decomposition of these high molecular weight glycols in aqueous solutions.

Applications

The polyethylene oxide gums, like other water-soluble colloids, can be used in myriad applications requiring thickening, suspending, emulsifying and film-forming properties. Relatively few of these have been investigated. This report is confined to those applications in the toilet goods industry where the polyethylene oxide gums appear to make a unique contribution. Many of the reported characteristics will undoubtedly suggest additional applications.

Entirely unexpected is the behavior of these gums in aqueous surfactant solutions. The high molecular weight polyethylene oxides are generally not compatible with ethylene oxide-derived nonionic surfactants. However, they are compatible with the nonionic sucrose esters, as well as with cationic and anionic surfactants, including soap. At low concentrations they generally increase the creaminess of the lather produced with the anionic surfactants and the sucrose esters. However, they have a decided tendency to destroy the foaming action of soaps. Foam is virtually eliminated in a 5 per cent potassium cocoate solution containing 2 per cent of the gum. However, in other experiments employing 10 per cent of triethanolamine soap and one per cent of gum, the foam was not adversely affected. With all of the surfactants tested, the gum substantially increased the viscosity of the solutions. The degree to which the viscosity was increased varied with the individual surfactant.

An important observation concerning the use of these polyethylene oxides in surfactant solutions is the extremely high lubricity imparted both to the solutions and to the lather, as indicated by the feel on the skin and hair. The alkyl aryl sulfonates are somewhat unsatisfactory for use in personal hygiene because the film adsorbed on the skin exhibits a pronounced tack when the skin is almost dry. This effect is completely eliminated when these new gums are present in the composition. Many surfactants have an almost non-lubricating type of foam. With these gums present, the lubricating effect of the lather can readily exceed that of soap. Thus, it is not difficult to formulate shampoos and hand cleaners with enhanced consumer acceptance, using less expensive detergents in combination with these polyethylene oxides. The benefit in using these gums in manual dishwashing compositions is also apparent. The high lubricating value imparted by these gums may be related to the low adhesion of cast films on most surfaces.

Where soaps are used as emulsifying agents, the use of these high molecular weight gums to reduce foam and increase viscosity may be of advantage.

There are, of course, many problems in the development of synthetic detergent bars for toilet use. These include raw material costs and fabrication difficulties. However, creaminess of lather and skin feel are also important considerations. Both are substantially improved by the use of 1 or 2 per cent of these gums in the composition. Satisfactory detergent bars can be prepared using dodecylbenzene sodium sulfonate with 1 or 2 per cent of a polyethylene oxide gum, whitening agents and perfume. Other compositions based on currently marketed detergent bars are shown in Table IV.

TABLE IV
Detergent Bars

	Parts by Weight A	B
Dodecylbenzene Sodium Sulfonate	41.3	—
Sodium Lauryl Sulfate	15.0	—
Coconut Acid Ester of Sodium Isethionate	—	47.3
Sodium Tallow-Cocoate Soap (80:20)	30.0	15.0
Stearic Acid	—	30.0
Calcium Stearate	6.0	—
Titanium Dioxide	1.5	1.5
Polyethylene Oxide Gum	2.0	2.0
Water	4.0	4.0
Perfume	0.2	0.2

The polyethylene oxide gums are employed to advantage in many types of toothpaste compositions. They are good binders for the abrasives and they are compatible with the high ratio of humectants to

water used in toothpastes. Their behavior is not adversely affected by the presence of water-soluble salts, such as the fluorides, currently employed in some toothpaste compositions. They should not be

TABLE V
Toothpaste Compositions

	Parts by Weight			
	A	B	C	D
Polyethylene Oxide Gum	0.87	0.35	1.31	0.27
Water	28.2	24.9	16.8	28.8
Propylene Glycol	17.0	19.0	17.0	17.0
Glycerine	4.5	9.3	8.5	8.4
p-Hydroxy Methyl Benzoate	0.25	0.25	0.25	0.25
Sweetening Agent	0.005	0.06	0.06	0.06
Mineral Oil	1.0	1.2	1.1	1.1
Flavor	1.0	1.2	1.1	1.1
Sodium Lauryl Sulfate	3.5	—	2.9	3.0
Sodium Lauroyl Sarcosinate	—	2.0	—	—
Tricalcium Phosphate	43.6	41.7	—	—
Dicalcium Phosphate	—	—	51.0	—
Calcium Carbonate	—	—	—	40.0

used in soap-based toothpastes, unless a non-foaming preparation is required. When compounded with the usual anionic surfactants, they enhance foam. Undoubtedly, the most important contribution of these gums to toothpastes is improved mouth feel, presumably due to the lubrication quality of the gum solutions. We have not observed a comparable sensation with other gums. Regrettably, this effect can not be expressed in less subjective terms. Typical formulas are shown in Table V.

Satisfactory hair sprays can also be compounded with these polyethylene oxides gums. For anhydrous systems, solubility characteristics necessitate a change from the usual alcohol-Propellant 12 combination. The gum is not soluble in anhydrous ethanol. Solutions of the gum in mixtures of ethanol and methylene dichloride do not tolerate the large amounts of Propellant 12 necessary for an adequate spray. Instead, methylene dichloride is employed as the solvent and a combination of methyl chloride and a fluorinated hydrocarbon is used as the propellant. Since methylene dichloride is non-flammable only a relatively small amount of a fluorinated hydrocarbon propellant need be used to obtain a non-flammable spray. Dimethyl hydantoinformaldehyde resin is employed to impart adhesion to the hair. Any of the ester-type plasticizers discussed previously can be included to improve the flexibility of the film. Lanolin derivatives and esters of fatty acids may be included for gloss. An important feature of hair sprays based on the polyethylene oxide gums is the low hygroscopicity of the films.

The above examples indicate the general areas of usefulness of these high molecular weight polyethylene oxides. It can also be expected that these gums will contribute improved lubricity to a wide variety of creams, lotions and ointments.

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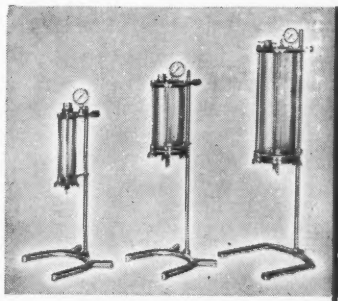

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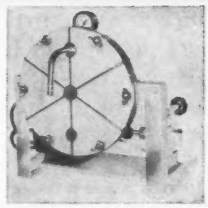

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it is preferable to employ the lower viscosity grades of the gum, to avoid the "stringiness" characteristic of solutions of the higher viscosity grades. In other applications, this property may be desirable.

Toxicology

Initial toxicological evaluation of a typical commercial grade of polyethylene oxide resin has been carried out by a recognized toxicology laboratory. This work is as yet unpublished, and more exhaustive work, including long-range animal feeding studies, is under way.

The evaluations completed to date are of the range finding type, and include single oral dose and ninety day feeding studies on rats, 24-hour skin contact tests on rabbits, skin and eye irritation tests on rabbits and intradermal and topical sensitization tests on guinea pigs.

The ninety day studies indicate that the level of polyethylene oxide resin that is substantially without effect in rats is between four and eight per cent. Rabbits gained weight following 24 hour skin contact with five per cent water solutions of the resin. Skin and eye irritation of rabbits from five per cent resin solutions were negligible. Guinea pigs could not be sensitized by combined intradermal and topical applications.

While there is as yet insufficient information for conclusive publication on the toxicology of these products, the preliminary data obtained seem promising enough to warrant the evaluation of polyethylene oxide resins in toilet goods, cosmetics and similar external applications. Further information on toxicological properties of these materials will be published at a later date.

Conclusion

High molecular weight polyethylene oxide gums can be used to advantage in many toilet goods applications. Since they have different chemical structures than other natural and synthetic water-soluble gums, the properties exhibited are also somewhat different. Outstanding properties of these gums include the extremely high lubricity they impart to formulated compositions and the compatibility of these gums with detergent compositions, electrolytes and many organic solvents.

Acknowledgment

The investigation described herein was supported by the Union Carbide Chemicals Company, Division of Union Carbide Corporation, New York, N. Y.

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OTHER VETIVER OILS

(*Continued from page 170*)

such as we find in sandy soil, not in laterite soil. We find in this region, as well as in Reunion, volcanic soil, which is most useful for the cultures of vetiver grass. Compact soil makes the cleaning of the roots difficult. Goma itself is situated at an altitude of 5,000 feet, and the vetiver fields are situated still higher. The geranium fields in this region are found to an altitude surpassing 7,000 feet.

In the Goma factory the vetiver roots are ground mechanically. This part of the Parkivu factory was heavily damaged by a fire in June, 1957. The coarsely-ground root material is now soaked in water one night before the distillation, which starts early in the morning in order to finish it late next day. After 12 to 18 hours, according to the pressure obtained, the distillation is over. The oil has passed through several separators. The water has been returned through cohobation. The yield is about 2.4 per cent of a yellow-brown oil with an optical rotation of approximately +18°. The quality has been distinctly improved during the past years, and the entire production is, moreover, subject to controls, strictly carried out by OPAC, the Office of Agricultural Products at Bukavu, the provincial capital at the southern end of Lake Kivu. Here, the official Belgian laboratories of control are constantly occupied with analyses of agricultural export products. The following requirements have been established for vetiver oil for export from Belgian Congo:

1. They must be free from water and contain less than 0.3 grams per liter of insoluble impurities.
2. They must be free from copper.
3. They should have physical constants within the following limits: specific gravity at 15° C.: from 0.990 to 1.040; refractive index at 20° C. from 1.520 to 1.528; they should be soluble in 3 volumes of alcohol at 80 per cent per vol.
4. They should have chemical constants within the following limits: saponification number: from 14 to 45.
5. Congo vetiver oil quality #1 should have an optical rotation at 20° C. of minimum +20°. Acetylation number: minimum 130. Congo vetiver oil, quality #2 should have an optical rotation of +15° to +20° and an acetylation number from 110 to 130.

As far as solubility is concerned, the Congo vetiver oil is generally, to my experience, more soluble than all other vetiver oils, except the very best qualities from Reunion Island.

Some of our readers will know, either from the work of Poucher or from current price lists, a product called "Resinold of Vetiver", which should be an extraction product of vetiver roots. I have met several products named "Resinoid of Vetiver", but most often these are only residues from the rectification of

vetiver oil or tail fractions from isolations of vetiverol. As far as Congo vetiver resinoid is concerned, I know this product perfectly well. It is absolutely pure, and constitutes the result from an extraction of vetiver root with a solvent. The solvent has been removed under vacuum. The resinoid obtained is a brown mass, highly viscous, and its price is no less interesting, when compared to the effect of this product. It is often desirable to obtain a vetiver effect in the soap perfume or in other low-priced perfumes, and this is the situation where vetiver resinoid presents a nice solution for such problems. The fixative qualities of vetiver oil are still more pronounced in the resinoid, and the price of the resinoid is only little more than half the price of the oil. If such a product should meet with success among the consumers, the production could easily be a continuous one, and even be increased within a few years.

This is exactly where we find the most important headache of the settlers and distillers. They are too far from the consumers, too far from the problems among the users of their products, and this is the reason why certain settlers have abandoned their plantations of perfume plants and changed to coffee, manioc or cocoa, when the outlets of essential oils have been weak or on the down-trend, prices declining, etc. This is very discouraging for products so highly problematical to produce. It seems that the courage and confidence have returned, and significant extensions of plantations have taken place in several groves. Even some abandoned plantations have been put into cultivation again with perfume plants. The presence of an experienced perfumer, Legast, in the heart of this region, insures also a useful contact between producers and consumers, and the problems of both parts.

We have so much more reason for being satisfied with the fact that the Belgian settlers throw themselves into this production with great energy and enthusiasm. They not only produce good essential oils, but are constantly alert to introduce new products with interesting effects. Without some encouragement the producers of the essential oils would soon find themselves in the difficult situation where only those essential oils which can be used as raw materials in the production of isolates will be produced. For vetiver oil, at least, there has not yet been found suitable synthetic replacements.

To mention the next westward step of vetiver grass, we should not omit the plantations in Portuguese West Africa, Angola, although the production here is very small. In 1938, the German perfumer and flavor chemist, Alfons M. Burger, left his unhospitable homeland, and soon settled down in Angola, where he has created a beautiful estate of perfume plants, coffee and other useful local plants. He has a modern distillery at his disposal, and

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through frequently published scientific papers we have been able to follow the development of the highly interesting one-man experiment. Geranium, lemongrass and vetiver oils are among his products exported to Europe. The readers will no doubt remember Alfons M. Burger from his classical books: "Leitfaden der modernen Parfumerie" and "Das Buch der Aromen".

Almost as a curiosity, we should mention the experimental cultivation of vetiver grass in Spain. Rootlets were extracted with benzene, and the extraction product was a semi-liquid mass. By alcohol-extraction of this resinoid, an absolute oil was produced. Both had a very high ester number, a characteristic only seen in Indian vetiver oil. These products are not commercially available.

If we should continue along the "Vetiver road" towards the West, we would soon end up in Brazil. True enough, vetiver root is cultivated in Brazil for the purpose of distilling the oil, but until now, the anual production has been of the magnitude of one ton or less. The production was encouraged during the years of scarcity in World War II, but Haiti was then able to supply considerable quantities of this oil from the abundance of old vetiver fields in that island.

Haiti is not on our "vetiver road", although we have now travelled almost around the world with the grass. Vetiver grass was already plentiful in Haiti, before it even arrived in Belgian Congo, Angola or Brazil. The grass was not cultivated in Haiti for the purpose of distilling oil, but it may have been introduced as a soil-erosion protective plant, which resulted in an abundance of grass, when suddenly the interest in the scarce oil encouraged the Haitians to make trial distillations. Today, Haiti is among the three great producers of vetiver oil: Reunion, India and Haiti. But the Indian oil is largely absorbed locally, and a good part of the Reunion oil is used in Europe. Hence the impression, that Haiti vetiver oil is actually the largest in quantity. Very likely, it may become so in the near future, but the Haitian vetiver oil remains a quality in itself, different from all the other vetiver oils. The reasons are obvious: The grass grows wild as well as cultivated, the distillation is carried out in only two, yet rather modern distilleries, and the distillers have thus not obtained the century-long experience in field-distillation, as have the Reunion-growers.

Fortunately, there is a good demand for all qualities of these vetiver oils, and after the second World War, the price of vetiver oil has been among the most stable of all the "big" perfume oils, a fact, largely contributing to the equally stable popularity of this exquisite oil, the perfume fixative "par excellence".

DETERMINING THE MARKET FOR NEW PHARMACEUTICALS

(*Continued from page 177*)

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THE IPANA PLUS "BRAINSTORM"

(*Continued from page 175*)

The dentifrice itself had to be formulated to fit the requirements of the package. The consistency had to be compatible with the experience of the consumer and at the same time have a consistency that was sufficiently low for the product to "flow" from the squeeze bottle container.

As mentioned above, the development of the formula and the package were instances of creative thinking. Creative thinking is different from Brainstorming. Remember, brainstorming in general is based on the principle that ideas spark ideas and that a number of people in a matter of a few hours will develop more ideas than if one person worked independently. (Incidentally, the mechanics of Brainstorming are best explained in *Applied Imagination*, a book by the originator of "Brainstorming", Alex F. Osborn, president of the Creative Education Foundation.

Creative thinking, on the other hand, utilizes the epistemological method which dates back at least to the Greek philosophers. It involves analyzing the problem to find the critical factor—the one thing that must be accomplished or changed before alternative solutions can be considered. Once the critical fatcor is established beyond a doubt, then the possible solutions are set forth with their pros and cons. By carefully weighing those advantages and disadvantages, it can then be determined which is the best solution. This is exactly what was done to develop the

formula and the package for Ipana Plus.

Once we had a product and a package, market research tested the acceptability of the product among consumers who tried Ipana Plus and unearthed the salient features. These in turn were hammered into outstanding advertising by our advertising group along with Doherty Clifford Steers & Shenfield who handle the Ipana account.

Production and purchasing had to work with new suppliers and to establish facilities for handling the large scale production on top of an already heavy workload. Cost accounting and forecasting played an important role in the establishment of the pricing schedule. The merchandising and sales departments developed and prepared complete trade presentations that were greeted with spontaneous applause by all the divisional managers.

To have accomplished all this in 12 months is a job in which Bristol-Myers takes great pride.

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(*Continued from page 195*)

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2,800,475—G. D. Searle—3,4,5-Trimethoxybenzoic Acid Esters N-Hydroxyalkyl Hydroxyisoquinolines

2,800,476,7—Arthur Stoll et al.—Ester-Like 6-Alkoxy-Tropine Derivatives and Quat. Ammonium Halides Thereof

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